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COMPUTERWORLD

Into the Infocosm
Where does the I-way lead? Find out in this month's Leadership Series, following page 32

Frame relay

AT&T targets private SNA nets

By Bob Wallace

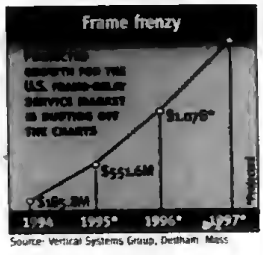
Seeking to extend its lead in the frame-relay market, AT&T Corp. plans later this year to offer a service that moves IBM SNA networks from private lines to far cheaper frame-relay networks.

With the offering, AT&T would provide frame-relay connections, special networking equipment needed at user sites and a multitiered service and support program for mission-critical applications that run on SNA networks, *Computerworld* has learned.

Analysts agreed that IBM shops could save roughly 30% to 40% on wide-area network charges by moving from their current multidrop private-line networks to AT&T's public network-based frame-relay service.

A 40-site network, for example, could cost almost $8,500 a month, while a roughly equivalent private-line network

AT&T, *page 115*



Source: Vertical Systems Group, Dedham, Mass.

IBM settles on suite

By Cheryl Gerber

In an effort to calm skittish users, IBM confirmed last week that its primary desktop software offering in the U.S. will be the Lotus SmartSuite applications portfolio.

That confirmation is intended to end speculation that StarDivision GmbH, a German company whose desktop suite IBM distributes in three European countries, was slated to become IBM's package of choice in the U.S.

"SmartSuite is the strategic desktop offering from IBM and Lotus," said Steve Mills, general manager at IBM's Software Solutions Division in Somers, N.Y. Last week, Bob Weiler, senior vice president of the Lotus Desktop Division, delivered a similar message to the Lotus worldwide sales force.

In an internal memorandum to the sales staff, Weiler asserted that "IBM and Lotus will promote, develop and distribute one strategic

Lotus, *page 115*

How IBM and Lotus could merge their desktop technologies

1. **IBM MQSeries** — Message transport/middleware could be integrated into Notes
2. **Time and Place/2** — IBM's calendaring and scheduling technology could ruggedize Lotus Organizer, keeping its front end as it becomes more Notes-like
3. **IBM's Visual Document Library and ImagePlus VisualInfo** could adopt the Notes user interface while supporting other platforms

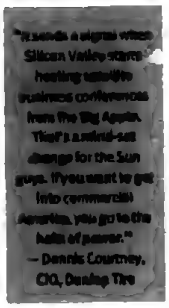
Source: A Gartner Group, Inc. report, Stamford, Conn.

Sun sharpens IS approach

Alliances target service, support issues

By Jean S. Bozman

Sun Microsystems, Inc. hopes to vault itself into the data warehousing and mainframe replacement markets for enterprise servers next week. The vendor will make a major strategy announcement that includes partners such as SAP America, Inc., Cray Research, Inc. and Amdahl Corp.



At a press conference scheduled for July 25 in New York, $5 billion Sun is expected to join forces with an array of software partners and systems integrators, users and analysts said last week.

The moves are intended to bolster the Mountain View, Calif., company's spotty support reputation with corporate information systems managers as it prepares to battle larger rivals IBM and Hew-

Sun, *page 16*

Directory API may bridge net gaps

By Laura DiDio

Large corporate users and software developers can't wait to get their hands on a forthcoming standard set of application programming interfaces from Microsoft Corp.

These APIs could spell relief for users who have been grappling with the task of writing duplicate utilities and managing dueling protocol stacks to access different network directory services.

The Open Directory Service Interfaces are supposed to eliminate the complexity associated with writing applications for different directories. Another potential benefit of the ODSI API would be centralized management for a variety of tasks.

Best of all for end users, the APIs will enable a single log-on for access to multiple corporate directories. It will also let users easily find and access all types of network resources, from laser printers to directories and databases, no

APIs, *page 115*

The Silicon Ceiling

About half of 200 business managers *Computerworld* recently surveyed said they wouldn't appoint IS execs to ANY top business post. That makes IS Chief Anthony Fedanzo mad as hell. See In Depth, page 90.



'96 campaigns go on-line

Politicos blazing cyberspace trail

By Mitch Betts



Move over, talk radio. The Internet's World Wide Web is fast becoming a new weapon for politicos as well as a battleground for next year's elections.

"In 1996, there will be a horrendous amount of political activity on the Internet," predicted campaign guru Frank L. Tobe, president of Applied Political Technologies, Inc. in Santa Barbara, Calif.

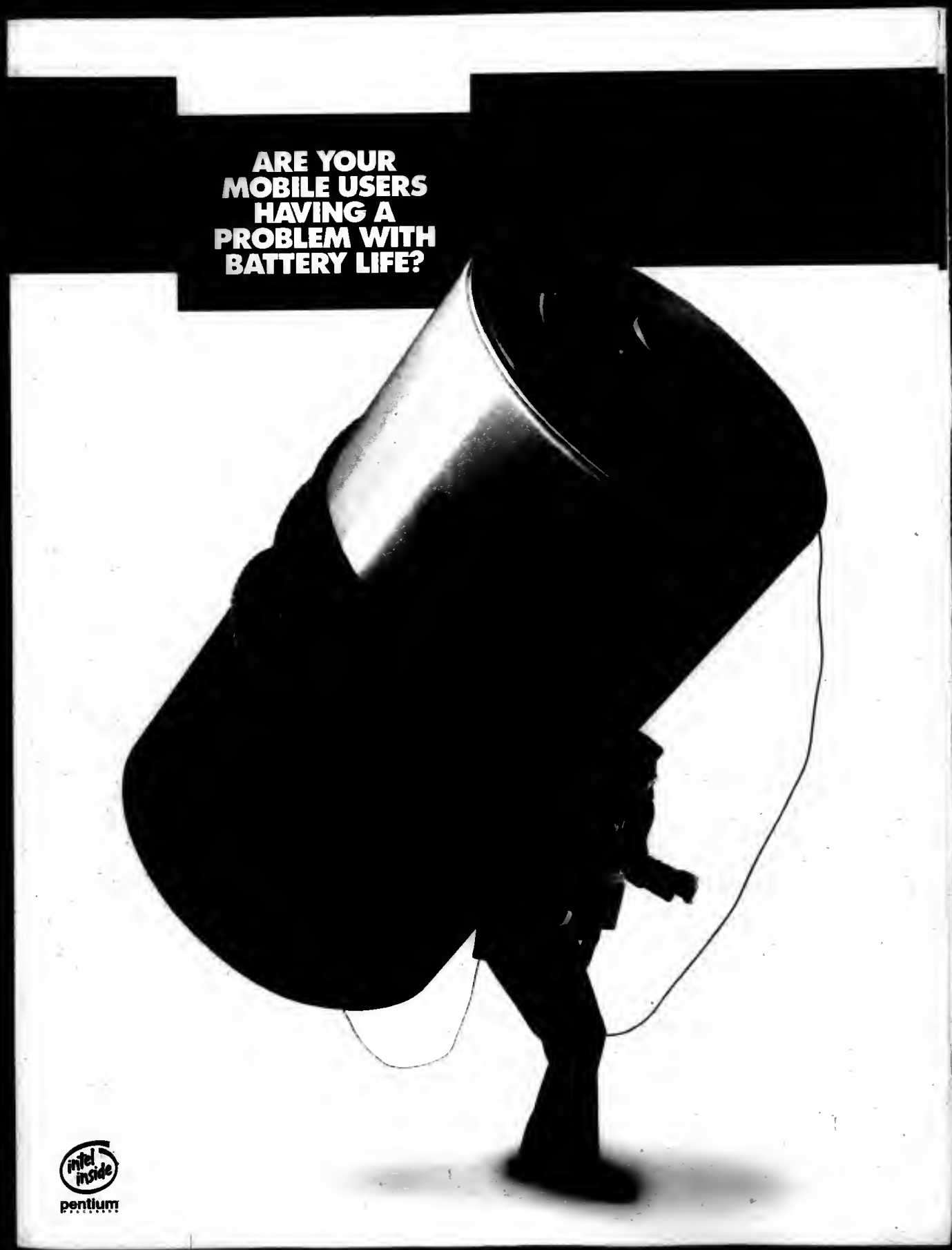
Next month, for example, will see the debut of PoliticsUSA, a Web site that may become the central meeting place for political junkies. It is a multimillion-dollar project of the Times-Mirror Co.'s *National Journal*, a weekly magazine in Washington, and American Political Network, a publisher of political tip sheets in Alexandria, Va.

Some of the largest political campaigns have an information systems manager on staff, but the Web sites are often built by "Internet presence" firms, such as Tenagra Corp. in Houston, Berkeley Internet Connections in Berkeley, Calif., and Digital Equipment Corp.'s Business Internet Group

For example, Town Hall, a Web site launched

Politicos, *page 14*

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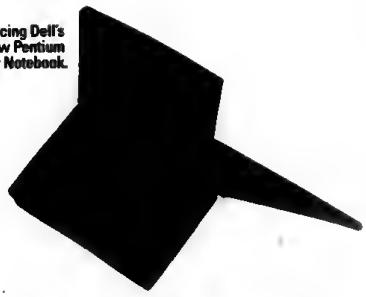
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*The VeriTest Cross-Country v2.0 test simulates typical executive use of Microsoft Office® applications in Microsoft Windows® v3.11 during an airplane flight. Power management was enabled and 8MB of RAM was installed. VeriTest, inc. is located in Santa Monica, CA. †For a complete copy of our Limited Warranties, please write to Dell USA L.P., 2214 W. Braker Lane, Bldg. 3, Austin, TX 78758. Prices and specifications valid in the U.S. only and subject to change without notice. Pentium and the Pentium processor logo are registered trademarks of Intel Corporation. ©1995 Dell Computer Corporation. All rights reserved.

July 17, 1995

What's Inside

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Resistance is FUTILE!

Most manufacturers say the difficulty of working with point-of-sale data exceeds the benefits. But retailers think otherwise — and jeans maker Wrangler, Inc. is proving them right

Management, page 71

■ **Novell plans to add symmetrical multiprocessing** to NetWare 4.1 by the end of the summer and to introduce a native version of TCP/IP in the next major release of NetWare 4.x by the end of the year. **NEWS**, *page 2*

■ **Cabletron enhances its network management software** with an upgraded module that watches SNA networks. **NEWS**, *page 6*

■ **Octel announces a switch** for exchanging voice messages among disparate systems. **NEWS**, *page 8*

■ **Digital pumps out a new Alpha workstation** with a 3-D graphics package for engineering and design applications. Analysts say it shows Digital is a technology leader still grappling for market acceptance. **NEWS**, *page 10*

■ **House Speaker Newt Gingrich** lays out his IS vision to 400 software executives. Reaction is mixed. **NEWS**, *page 15*

So you want to be a

SAP?

Aspiring R/3 consultants and developers can pick from three professional tracks

See **Careers**, *page 93*

■ **Stratus will unveil** in October a fault-tolerant PC server for LANs code-named Radio. Built with Intel processors and other commodity ingredients, it's Stratus' first crack at the PC server market. **NEWS**, *page 16*

■ **McCaw Cellular has developed a two-way messaging protocol** for Cellular Digital Packet Data using an IP-based infrastructure. **NEWS**, *page 16*

■ **Memorex-Telex introduces a center that features integrated service, support and training to help IT manage networks.** A key differentiator is a link with the company's on-site support services. **NEWS**, *page 24*

■ **Yellow Freight System's salespeople are spending 30% more time with customers** thanks to a new sales automation system. **DESKTOP COMPUTING**, *page 43*

■ **Lotus' NotesView adds management functions to Notes**, such as the ability to figure out how well applications are running on servers. But the tool does not support as many back-end network management platforms as it should, analysts said. **WORKGROUP COMPUTING**, *page 49*

■ **Novell's entry into the workflow arena** should boost the whole market. **WORKGROUP COMPUTING**, *page 49*

■ **Apple beat Microsoft with its on-line service** by almost a year. And although Apple's EWorld has carved a niche for itself, users say pricing and marketing gaffes have kept interest relatively low. **ENTERPRISE NETWORKING**, *page 55*

■ **On the Internet Page:** NaviSoft's publishing solution for the Web integrates a browser and Hypertext Markup Language editor into a single tool. **ENTERPRISE NETWORKING**, *page 57*

■ **Citing greater speed, ease of use and support for Microsoft's Windows 95**, some early users declare Visual dBase 5.5 from Borland a solid hit. **APPLICATION DEVELOPMENT**, *page 67*

■ The difference between great programs and poor programs is how well code is designed, organized, documented and supported by the programming environment, **Richard Demers** says. **APPLICATION DEVELOPMENT**, *page 68*

■ **As users build bigger data warehouses**, high-speed file transfer is critical. Check out three bulk transfer tools. **MARKETPLACE**, *page 104*

■ With Windows 95, Microsoft's credibility in the IS department is on the line, **Bill Laberis** says. **EDITORIAL**, *page 36*

■ **Denise Hazlett** says Internet pricing needs an overhaul to cope with the congestion caused by multimedia traffic. **VIEWPOINT**, *page 37*

■ **Patricia B. Seybold** warns CIOs that Microsoft doesn't have "enterprise solutions" for mission-critical systems. **VIEWPOINT**, *page 37*

■ 3M's Travan format promises to give tape media a broader role as a backup media, **Charles Babcock** says. **COMMENTARY**, *page 116*



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Executive Briefing

Ailing Salomon Brothers is considering farming out its mainframe and distributed transaction processing activities in what would be a "precedent-setting" move. *Page 4.* **People's Bank of Connecticut** decides to continue running its data center but outsources its branch operations and converts teller terminals to PCs. *Page 63*

Microsoft buys network management technology to add to its BackOffice server suite. *Page 2.* A package debuts for **managing Windows NT and Novell NetWare file servers** from one console. *Page 49*

Oracle plans to sell its object-oriented development kit over the Internet beginning July 26. The database powerhouse also plans to unveil key upgrades to its **client/server packages** tomorrow. *Pages 8 and 28.* Meanwhile, **Sybase** posts its second straight quarterly loss, and **Informix** plans this week to upgrade its New Era development tool kit. *Pages 12 and 67*

Compaq's sluggish portable computer business will receive a vitally needed boost later this summer, and the **gap between mobile computers and desktop PCs** is rapidly closing. *Pages 4 and 43.* Meanwhile, PC makers are facing a **shortage of critical components**, including batteries for notebooks. *Page 44*

Trying to prevent client/server doors from slamming in the mainframe's face, **IBM** late this year will add native TCP/IP routing support to its System/390 front-end processors. That should help **make mainframes more palatable as large servers.** *Page 7.* **IBM revamps its worldwide software licensing and pricing.** *Page 63.* Mainframe and AS/400 customers will get a wide choice of products for **connecting Microsoft's Windows 95 to host systems** soon after the operating system ships, but initial demand is expected to be limited. *Page 12.* **IBM continued to ride a strong financial wave** in the second quarter, financial analysts said in advance of the company's earnings report this week. *Page 33*

A Cisco package due this week will let users manage direct high-speed LAN-to-mainframe data links from the vendor's CiscoWorks suite, and Cisco bolsters its midrange routers. *Pages 2 and 20.* **Fore announces an Asynchronous Transfer Mode workgroup switch** that costs 40% less than its predecessor. *Page 6*

The 5th Wave *by* Rich Tennant



"Shoot, that's nothing. Watch me spin him!"

Novell juices up NetWare with SMP

By Laura DiDio

■ Novell, Inc. will release long-awaited symmetrical multiprocessing (SMP) support within the next eight weeks to boost performance of NetWare 4.1 networks, company officials confirmed last week.

SMP was designed to significantly enhance performanre hy off-loading processing chores from a single processor to as many as 32 processors, said Willy Donahoo, Novell's director of marketing.

"Internal Novell studies have indicated that 50% to 60% of the NetWare processor's time is consumed by potting data packets onto the network and taking them off. SMP solves this problem by off-loading the processing and distributing it among several or many processors," Donahoo said.

The result is that busioesses, especially those running large databases and groupware applications, have a lut more available bandwidth to run and manage non-SMP applications and other network activities such as backup, storage aod electronic messaging.

Novell was expected to ship SMP support in the first quarter, but at the firm's Brainshare technical conference in March, Novell President Robert Frankeoberg said delivery had fallen behind by at least a quarter.

Catch-up time

But Novell is making up for lost time, and Tohy Corey, vice president of marketing at Novell's Operating Systems Division, said the beta is breezing along with no major problems.

At least one of the 50-plus users who have been testing SMP for NetWare 4.1 since April agreed. "I've been running SMP on a pilot NetWare 4.1 network for the past couple of months, and it's been very stable and reliable. The performance is a real screamer; I'm seeing an order of magnitude boost over current versions," said the user at a large financial institution, who requested anooymity.

The racer's edge

- Backward compatibility with NetWare 4.1's application programming interface
- Scalability and performance boost ranging from 50% to 100%, depending on network configuration
- Multithreaded NetWare Loadable Modules and RSA Encryption to distribute processing across multiple processors and boost performance
- Support for up to 32 processors (maximum number of processors supported by systems vendors is 12)

SMP lor NetWare 4.1 will ship as an add-on NetWare Loadoble Module at the end of next month. Pricing bas not yet been determined, Corey said.

lo related news, Dooahoo said Novell will ship a native implementation of tbe TCP/IP transport protocol in tbe oext major release of NetWare 4.x, which is due out oarly next year.

Availability of native TCP/IP is crucial to Novell users such as Auggie Cardenas, a network administrator at Bear, Stearns & Co., an investment hrokerage in New York, because bis firm wants to standardize on TCP/IP.

"We'd love to toss IPX out the door. But right now, we can't use Novell's current TCP/IP implementation because it's just too slow, so we're forced to stick with IPX until Novell ships the native version of TCP/IP," Cardenas said.

Novell's native TCP/IP offering will feature transport speed commensurate with IPX, Donahoo said.

Cisco to manage Big Blue internets

By Bob Wallace

Cisco Systems, Inc. is expected to announce this week a suite of network management programs that will allow users to monitor the performance of high-speed connectioos in IBM networks.

Sources close to Cisco said une of the programs will work witb Cisco's CiscoWorks network management package and let users manage the linkage, which it calls the Channel Interface Processor (CIP).

A Cisco spokesperson confirmed the company's plans for the CIP management program hut would not provide other details or cost information.

CIP is a direct cable connection between the router and tbe mainframe as opposed to other common schemes that require intermediary controllers.

CIP was the result of a Jannary 1994 agreement between the router powerhouse and IBM's Large-Scale Computing Division to develop a product that integrates mainframes into client/server networks using two different technologies.

Additionally, the CIP approach can cost users $28,000 to $59,000, depending on the number of LAN-to-mainframe connections and speeds.

Big benefits

Analysts say thal although savings vary by user, companies can save more than 25% in tutal costs by using CIP in place nf intermediary 3172 controllers and realize additional benefits as well.

"Users can save that much while boosting throughput with CIP," said Fred McClimans, a principal at Decisis, Inc., a consulting and research firm in Herndon, Va.

Announced in early October, CIP takes a single slot in Cisco's high-end 7000 and 7010 enterprise chassis-based routers. With CIP, Cisco lets users choose either or both of IBM's channel attachment technologies.

Users can go with the bus-and-tag technology found on most installed mainframes and the 17M hit/sec. Escon scheme used on IBM's newer ES/9000 systems.

Microsoft dives into net troubleshooting

By Stuart J. Johnston and Patrick Dryden

Microsoft Corp. last week announced it has purchased key network troubleshooting technologies that it will integrate with its Systems Management Server (SMS) and BackOffice server suite sometime next year.

With these wares, Microsoft is aiming to give systems administrators the ability to more accurately diagnose problems when they distribute software over networks that work with SMS, Microsoft officials said.



The products Microsoft is acquiring from UK-based Network Managers Ltd. are based on the Simple Network Management Protocol (SNMP), a standard protocol for monitoring and configuring devices and applications across a network.

Close couple

Microsoft will enhance Network Managers' NMC Vision so it tightly integrates with the BackOffice server products, especially SMS, said Michael Emanuel, an SMS product manager. NMC Vision and all of the BackOffice server products run under Windows NT.

While NMC Vision does provide some features that compete with major network management products, Microsoft officials said the company is not attempting tu produce a comprehensive network management product. Instead, its goal is to simplify the troubleshooting of software distribution problems. "We're not trying to seize control of the network," Emanuel said.

"Bundling SNMP support into SMS will really be helpful [because] we want to get away from proprietary tools and multiple management consoles," said Kei Lee, a oetwork analyst at Chevron Ioformation Technology Co. in San Ramon, Calif. Lee needs to nse SMS and several other management tools because the company rons both Windows NT and Novell, Inc.'s NetWare.

At lenst for software distribution tasks, incorporating NMC Vision technology into SMS will eoable users such as Lee to use one console.

NMC Vision costs about $6,000, whieb is high compared with Microsoft's pricing strategy for BackOffice. But the company has not decided how it will price the new product. "The key is low-cost servers," Emanuel said.

Radius clone due

First to target traditional resellers

By Lisa Picarille

Apple Computer, Ioc will get its first real taste of Macintosh clone competition in two weeks. Radius, Inc. is expected to serve up a PowerPC 601-based Power Macintosh that will be the first Macintosh clone to go bead-to-head with Apple in the lusiness market and computer retail channels, accordiog to sources close to Radius.

"This is good for the Apple market as a whole," said Joe Ferlazzo, a senior onalyst at WorkGroup Technologies, Inc., a market researcber in Hampton, N.H. "To be a viable competitor to Windows 95, the Mac OS needs to be out there running on as many machines as possible. And if the PowerPC is perceived as gaining market share, then users in turn will perceive it as a viable platform to be on."

To date, the decision to license the Mac OS has had little impact on Apple's attempt to expand its operating sysfem's market share because only Power Compoting Corp., which began shipping Power Macintoshes in limited volumes in May, is focusing on the general business user — and only via mail order. The other licensees of the Mac OS — DayStar Digital, Ioc., Pioneer Electronics Corp. and Radius — have announced products that target niche markets.

According tu sources briefed on Radius' plans, the Sunnyvale, Calif., company is targeting the general business user with its forthcomiog Radius 8100/110. The machine will be sold through traditional distribution channels and will be the first Radius-labeled system to be built by IBM [CW, June 19]. Radius declined to comment.

Based un the design of Apple's 8100/110 tower system, the Radius 8100/110 reportedly will use the 110-MHz PowerPC 601 chip and have six Nubus slots. Radius' 8100/110s are expected to be priced well under $5,000. Apple's 8100/110 costs $5,799.

The furthcomiog Radius machine is also seen as an alternative for users who want to leverage investments in Nubus add-in cards rather than upgrade to Apple's recently announced PowerPC 604-based Power Macintosh 9500 series.



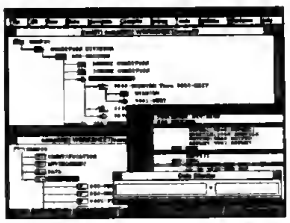
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Troubled Salomon weighs outsourcing

By Thomas Hoffman and Julia King

The mood at Salomon, Inc. these days is anything but brotherly.

Last week, the New York-based brokerage stunned Wall Street by announcing that despite the recent stock market boom, it expects to post a second-quarter loss of roughly $65 million — its fourth quarterly loss in the past five periods.

But even more jarring to the Wall Street information systems community are Salomon's recent overtures to outsourcers.

Last week, a senior Salomon IS executive disclosed that the company may farm out all of its mainframe and distributed systems operations. Such a move would include transaction processing, the lifeblood of any financial services company.

Outsourcing transaction processing has long been taboo on Wall Street because of its status with virtually all competitors as a critical core competency.

"It would be a first of this magnitude," said Raphael Benabou, a financial services consultant in Manhasset, N.Y.

Silver lining

Brokerages have largely confined outsourcing to niche areas such as network management and desktop services, said DuWayne Peterson, former chief information officer at Merrill Lynch & Co. and now president of Communications Broadband Multimedia, Inc. in New York. Peterson's start-up provides network services to the financial services industry (see story below). And while outsourcing data centers and transaction processing is "very unusual," Peterson said he believes Salomon is on the cutting edge of a trend.

"What Salomon is doing is going to happen more and more" as cost-conscious brokerages shift their focus from acquiring technology to using it more effectively, Peterson said.

Should Salomon eventually sign on with an outsourcing company, "it would be precedent-setting," said Robert J. Cassiliano, senior operating officer at Salomon's business technology organization in Rutherford, N.J.

"The cost pressure is making for a change in thinking," Cassiliano added. "As time goes by and outsourcing firms gain more and more leverage, it is too compelling not to outsource."

Indeed, outsourcing could become all the rage on Wall Street, where transaction processing typically makes up 60% to 70% of a brokerage's back-office expenses. That translates into hundreds of millions of dollars for a company Salomon's size, Benabou said.

Still, analysts were cautious about what cost savings could accrue from outsourcing transaction processing because Salomon is already considered one of the most cost-effective managers in that area.

Most agreed, however, that third-party outsourcing stands a better chance of success than if Salomon were to again team up with one or more rival brokerages to run a common back-office environment. So far, most back-office partnering efforts have failed miserably.

In 1990, Salomon teamed with Morgan Stanley & Co., Citicorp, Lehman Brothers, Goldman, Sachs & Co. and First Boston to form Electronic Joint Venture Partners. The group's mission was to build a single networked computer system that would enable the "Gang of Six" to share and sell maintenance resources for selected analytics systems.

But the venture missed its 1993 target date, and backers' support began to waver. Five years and more than $80 million later, the venture has landed fewer than 100 customers for a modestly revised product set, according to the June 1995 issue of *Institutional Investor* magazine.

Strutting T1 services on the Street

Former Merrill Lynch CIO DuWayne Peterson is back on the Street.

Peterson is president of Communications Broadband Multimedia, Inc. (CBMI), a start-up that this month will begin rolling out a series of enhanced switched T1 network services that furnish desktop users with full multimedia capabilities on a pay-as-you-go basis.

The target customers are Wall Street brokerages and other financial firms, which Peterson said have "a huge demand for moving massive amounts of data and for videoconferencing for doing deals."

In New York, CBMI buys its T1 capacity from Teleport Communications Group, which already has links to most lower Manhattan financial firms.



CBMI's DuWayne Peterson: *Wall Street must move huge amounts of data*

For $500 a month, users get T1 network access plus all necessary software and a 486-based multimedia workstation, which is manufactured to CBMI's specifications by IBM.

Customers then pay per-minute connection fees ranging from 50 cents a minute for a local call in New York to $2.50 for a New York-to-San Francisco connection.

Peterson described the offer as an "overlay service" because it requires no changes in user companies' network or computing infrastructures. Leasing enhanced broadband services rather than buying dedicated facilities "is a great way for companies to evolve to the next world of the superhighway," he added. — *Julia King*

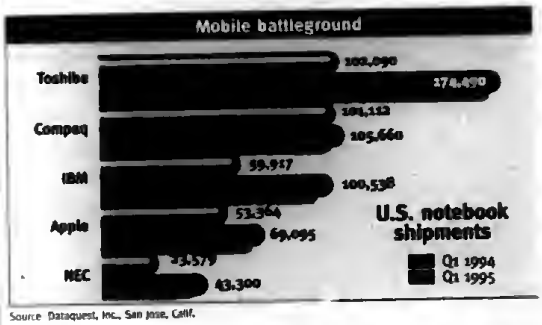
Compaq portables take Pentium dip

By Jaikumar Vijayan

Compaq Computer Corp.'s sluggish portable computer business will get a much-needed jolt next month when the company unveils a new line of feature-rich Pentium-based notebooks.

The new notebooks — which sources close to the company say will replace the rapidly aging LTE Elite series as Compaq's flagship portable product — will also help bridge the technology and pricing gap between Compaq and other leading portable vendors.

Based on Intel Corp.'s 75-MHz and 90-MHz Pentium chips, the notebooks will feature a highly modular and integrated design, snazzier screen technology, multimedia and more robust desktop expansion capabilities than are currently available on the Elites. Prices are expected to start at slightly more than $4,500.



Source: Dataquest, Inc., San Jose, Calif.

Falling behind

Compaq's new portables come at a time when its portable business has been sputtering. It has recently slipped behind other major vendors in announcing Pentium portables, which are fast becoming a standard at the high end.

According to a recent report by Montgomery Securities, Compaq has begun losing portable market share to Toshiba America Information Systems, Inc., NEC Technologies, Inc. and IBM. Compaq is not expected to fully turn around its portable business until at least next year, according to the report.

"If they bring out a Pentium line now, we would be happy to consider it. Basically, what we are looking for is more modularity and more options" from Compaq's portable line, said Glenn Jurmann, section manager at Baxter Healthcare Corp. in Deerfield, Ill.

The company has slowly begun to recover from the early quality problems associated with the LTE Elite [CW, Jan. 2], but that effort may be too late.

Many observers say the line is already behind the technological curve in terms of screen technology, battery capabilities, expandability and modularity.

And although Compaq still retains its position as one of the Top 3 portable vendors in the U.S., the company's mobile growth rate is well behind other top-tier vendors, according to recent market figures from Dataquest, Inc.

For instance, in the first quarter of this year, Compaq shipped an estimated 105,660 mobile computers in the U.S. market — a growth of about 4.5% over the 101,112 mobile units the company shipped in the same period last year. Growth rates in the mobile market were nearly 71% for Toshiba, 67% for IBM and 83% for NEC during the same period.

Manufactured by Invantec Group — Compaq's Taiwanese subcontractor — the new 75-MHz and 90-MHz Pentium notebooks will include the following features:

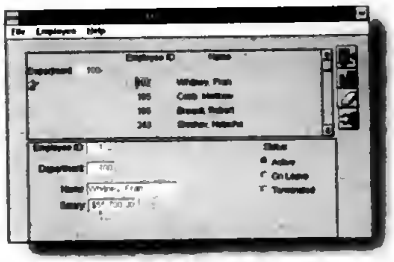
- A 10.4-in., 800- by 600-pixel active-matrix color monitor and built-in sound.
- A front-loading slot that allows users to change configurations on the fly via snap-in modules that include a CD-ROM drive, a second hard drive, a second battery or a 1.44M-byte floppy drive.
- Larger disk and memory — more than 1G byte of disk space and 8M to 40M bytes of RAM.
- A motorized docking station with more than 1G byte of disk space, built-in sound, the same front-loading slot as the notebook and a slot for battery recharging.
- An infrared port for printing and file transfer.

High-end mobile PCs catch up to the desktop. See page 43.

DEVELOPER PRODUCTIVITY COMPARISON

Sybase

PowerBuilder 4.0



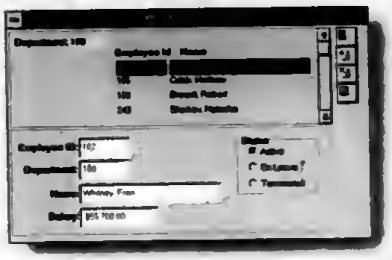
52 lines of code

```
ELSE
  COM
  dw_m
  dw_m
END I
Master
ed
long er
long ro
rownu
empnu
IF dw_
  COM
ELSE
  ROLL
  Messa
detail")
END I
Master
close(p
Master
dw_det
dw_det
dw_det
Master
Application.Open
SQLCA.DBMS=ProfileString("PB.INI","Data
base","DBMS"," ")
SQLCA.DbParm=ProfileString("PB.INI","Da
tabase","DbParm"," ")
open(w_employees)
Application.Close
DISCONNECT using SQLCA;
IF SQLCA.SQLCODE <> 0 THEN
  ROLLBACK using SQLCA;
  MessageBox("Disconnect",SQLCA.SQLER-
RTEXT)
END IF
MasterWindow.Open
CONNECT using SQLCA;
IF SQLCA.SQLCODE <> 0 THEN
  MessageBox("Connect
Error",SQLCA.SQLERRTEXT)
  HALT
END IF
dw_master.settransobject ( sqlca )
dw_detail.settransobject ( sqlca )
IF dw_master.Retrieve() = -1 THEN
  ROLLBACK using SQLCA;
  MessageBox("Retrieve","Retrieve Failed")
```

** Taken directly from "PowerBuilder Getting Started".
© 1991-1994 By Powersoft Corporation

Oracle

Developer/2000



4 lines of code

```
exit_form;
create_record;
delete_record;
commit_form;
```

It's amazing how many lines of code you'll find behind the exact same application.

These two programs do exactly the same thing: create a Windows application that retrieves and updates employee information stored on a database server. The 52 line PowerBuilder application was taken directly from the PowerBuilder manual. Oracle's new Developer/2000™* implements the identical application in just 4 lines of code.

If you want to experience the productivity benefits of second generation client/server tools call 1-800-633-1071, Ext. 8168.

ORACLE

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Cost cuts could open floodgates for ATM

Fore Systems' switch and cheaper adapters prime the pump

By Bob Wallace

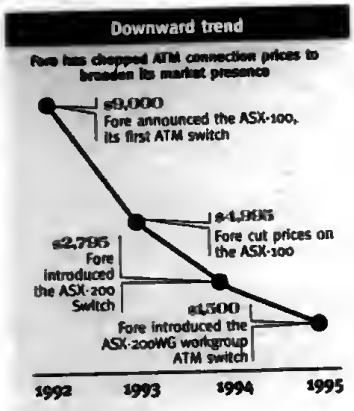
Fore Systems, Inc. last week announced an Asynchronous Transfer Mode (ATM) workgroup switch along with cut-rate adapters that cost up to 40% less than their predecessors, dramatically reducing the cost of high-speed ATM links to the desktop.

In fact, the price cuts are so significant that analysts predict it could open the floodgates to ATM sales, especially for large users and academic sites that already have high-end bandwidth-hogging data applications.

The prohibitive cost of ATM has undercut interest in the technology, said Tamm Dell'Oro, president of Dell'Oro Group, a research firm in Menlo Park, Calif. "But, by God, if [Fore] is dropping prices that much, they'll make this market happen."

Near-80% drop

With this announcement, the Warrendale, Pa.-based ATM market leader has slashed its price per ATM connection by roughly 80% — to $1,500 in three years. This price covers the cost of a 100M bit/sec. ATM LAN port on Fore's new four-slot workgroup switch and the cost of an ATM adapter card for a PC or workstation.



That price tag is also a sign that Fore is quickly closing in on $1,200 per port for ATM connections, the level at which ATM will be viewed as affordable by the user masses, said Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy.

"That pricing would make ATM mainstream and pressure other vendors to lower their prices."

Fore's new product pricing and adapter card price cuts make this the fourth year in a row that it has lowered ATM prices by roughly 40%. The switch will compete against products from Cisco Systems, Inc., Bay Networks, Inc., 3Com Corp. and Newbridge Networks, Inc.

Pricing in control

The aggressive pricing has paid off. There has been a corresponding rise in Fore's sales as its prices have dropped. The vendor posted sales of $1.04 million in fiscal 1992, $5.48 million in fiscal 1993, $23.5 million in fiscal 1994 and $75.61 million in fiscal 1995.

Other analysts said the product and adapter card pricing will start driving the ATM market today.

Fore's new ASX-200WG workgroup switch can be configured to support 12 to 24 100M or 155M bit/sec. LAN ports. And to further broaden ATM's appeal, Fore said it will offer products that support ATM at 25M bit/sec. by year's end but declined further comment.

Providing products that support ATM at 25M bit/sec. would pit Fore against Bay Networks, WhiteTree Technologies, Inc., IBM, Optical Data Systems, Inc. and First Virtual Corp. in what Nolle and Dell'Oro agree is the fastest-growing segment of the ATM market.

End users benefit

Network managers said Fore's new workgroup switch and the reduced rates for ATM adapter cards will enable them to deliver ATM to a much larger group of end users.

"We had originally planned to connect Apple Macintoshes and PCs to an intermediary Ethernet-to-ATM switch, which would have given them 10M bit/sec. of bandwidth," said Todd Holley, a network analyst at GTE Entertainment in Carlsbad, Calif. GTE Entertainment builds video games using digitized video and three-dimensional graphics. "But now, for a little more, we can connect them at 10 times the bandwidth directly to the ATM workgroup switch.

"The products and [revamped] prices make ATM real to more users, while the people who do our budgets are much happier," Holley said.

— Bob Wallace

Cabletron streamlines SNA network manager

Graphical module added to platform promotion

By Patrick Dryden

■ Cabletron Systems, Inc. will bolster its efforts to displace entrenched enterprise network management platforms this week by introducing software improvements that let administrators graphically monitor SNA devices and mainframe-based applications.

The enhanced Spectrum for Open Systems management server should entice administrators who are frustrated by an inability to distribute the management load of their growing networks, analysts said. It will also interest those who want to monitor both the TCP/IP and SNA portions of their enterprise environment, they said.

"Now Cabletron has a compelling SNA story to tell MIS as well as scalability for distributed networks that Hewlett-Packard Co., IBM and SunSoft, Inc. currently lack," said John McConnell, president of McConnell Consulting, Inc., an internetworking and management consultancy in Boulder, Colo.

Cabletron's BlueVision 2.0 module now runs entirely through Spectrum instead of relying on IBM's NetView for MVS. Barely 40 sites opted for the prior version due to that requirement and poor marketing, acknowledged Bob Travis, Open SNA program manager at Cabletron in Rochester, N.H. "Now we can offer large IBM shops a single console to view both networks as they transition from SNA to TCP/IP and eventually to a switched infrastructure," Travis said.

Completion of the new version delayed the formal launch of Spectrum Test Drive, a trade-in and discount program that stirred some discussion last month among attendees at the OpenView Forum, a user group for the HP management platform.

Through September, Cabletron is offering free evaluation of Spectrum, including BlueVision 2.0 and modules for popular hubs, switches and routers. Participants can trade in a copy of their management platform for Spectrum, get free training for one administrator and a 50% discount on other courses.

Spectrum 3.1, which shipped last month, added modules that specifically support hubs, routers and switches from leading vendors such as 3Com Corp., Bay Networks, Inc. and Cisco Systems, Inc. The server can now run on HP's HP-UX and versions of Unix from IBM, Sun and other workstation vendors.

Those missing pieces, coupled with BlueVision, legitimize Spectrum Test Drive, McConnell said. "Their aggressive promotion wouldn't have worked a year ago," he said.

More than cost savings needed

Although Cabletron's lure looks tantalizing, users may not bite.

"That definitely catches your eye, but saving money isn't the most important factor behind a change," said Larry Douglas, MIS project manager at Callaway Golf in Carlsbad, Calif. Four months into an implementation of IBM's NetView for AIX, Callaway would require more than savings, SNA and future scalability to evaluate Cabletron's offering, he said.

"An organization must be sufficiently dissatisfied with what it has to consider an offer like this, and we're not dissatisfied with HP OpenView," said Rick Sturm, a technical staff member at US West Communications, Inc. in Denver. "This is not a frivolous change."

The Spectrum server and console starts at $15,000. The BlueVision module costs $15,000, but Spectrum users can add it for half price during the promotion.

Distributed advantage

The time is ripe for Cabletron to promote Spectrum because key competitors are lagging in providing the distributed architecture needed to manage many nodes at many sites, said John McConnell, president of McConnell Consulting.

Hewlett-Packard will not deliver the distributed version of its management product, code-named Tornado, until at least next year. SunSoft is barely rolling out Solstice, its distributed platform. And IBM has improved NetView for AIX distribution but has not really achieved scalability yet, according to McConnell.

With current systems, management traffic bogs down essential business communications over expensive wide-area network links, and a central management server becomes a single point of failure.

Despite overcoming this limitation, Cabletron has struggled "due to the problem that end-user organizations don't expect a long-term solution to come from a hub vendor," said Jill Huntington-Lee, a principal at consultancy Brandywine Network Associates in Cinnaminson, N.J.

Memorex Telex opens support center for SNA migrators. See page 24.

System/390s to get TCP/IP

By Craig Stedman

IBM will start adding native support for routing TCP/IP data to its mainframe front-end processors late this year. The move is a critical part of IBM's effort to prevent the doors to client/server environments from slamming shut in the face of the System/390.

Mainframe shops that want to run TCP/IP traffic through IBM's 3745 and 3746 communications controllers today must encapsulate the data within their SNA transmissions. That throttles throughput and adds significant processing overhead at the mainframe and the controller, IBM officials conceded.

But native support for TCP/IP — the predominant open systems networking protocol — should ease the performance bottleneck and leave "one less obstacle" to using the mainframe as a large database and LAN server, said Robin Layland, an independent consultant in West Hartford, Conn.

The System/390 "has better management tools than any other server out there, but it was suffering from the burden of having to be an old-style mainframe that couldn't do TCP/IP very well," Layland said.

ATM on hold

IBM postponed plans to add support for Asynchronous Transfer Mode (ATM) networks to its front-end processors in order to focus on getting native TCP/IP out the door, said Yves Hartman, product manager for the 3745 and 3746. ATM support will not appear until early 1997, he added. Analysts said the change makes sense since widespread ATM deployment remains a future prospect.

To get the native routing support, IBM is adapting TCP/IP stack code developed by Proteon, Inc., which already supplies low-end routers to IBM. The TCP/IP support is due to ship at year's end for the 3745 and next April on the 3746 — a faster and less expensive device that IBM introduced last week as a stand-alone unit separate from the 3745 [CW, July 10].

Dimos Papadimas, vice president of network engineering and planning at Chemical Banking Corp. in New York, said internal testing showed that mixing multiprotocol traffic by encapsulation "would not satisfy the availability times that our business units are requiring of us for level of service."

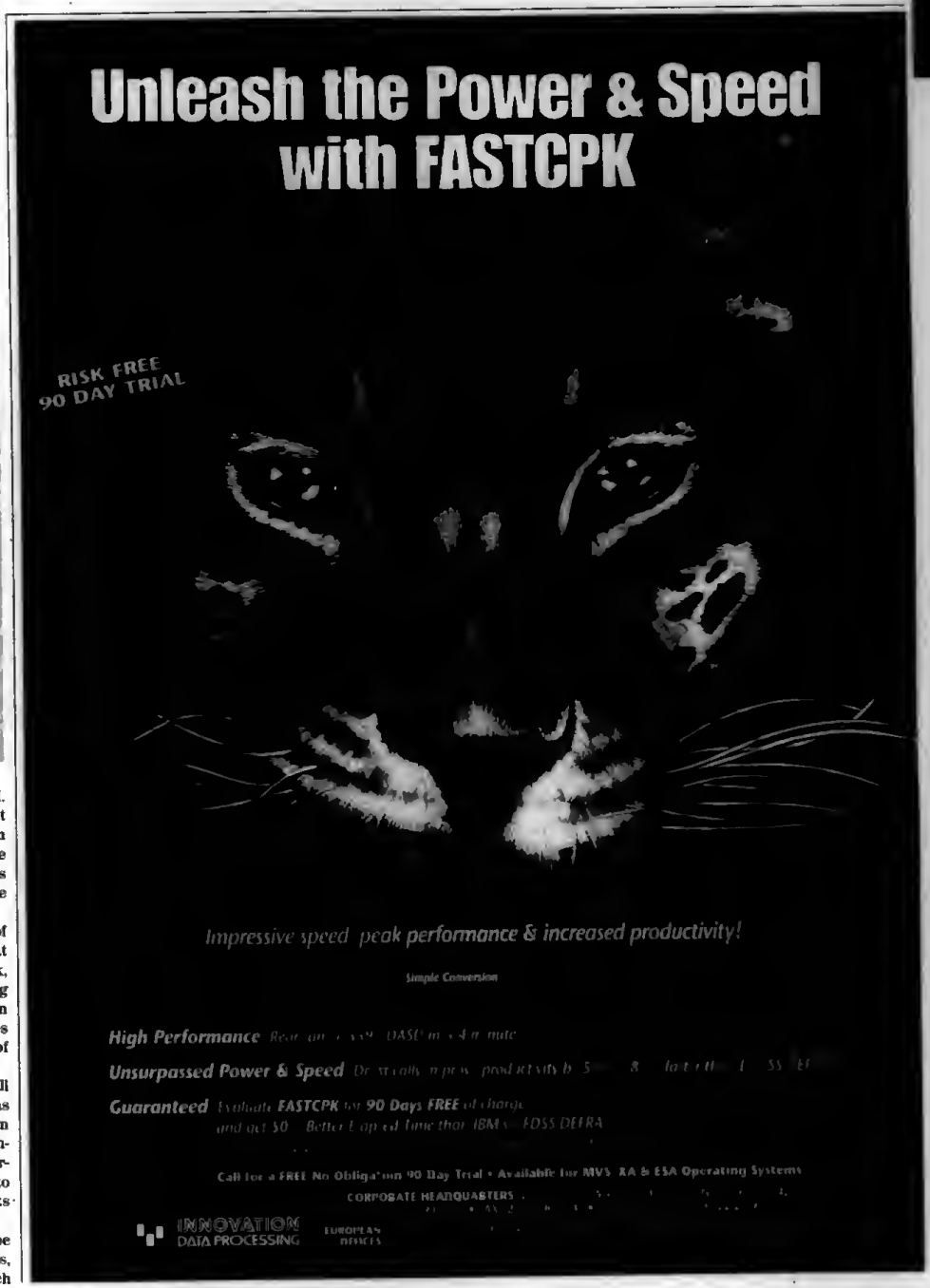
However, native TCP/IP routing will hopefully be another story, Papadimas said. The bank may implement TCP/IP on the 3746 next year in multiple-host installations, he said. That could cut operating costs by eliminating the need to bridge traffic back and forth between its SNA and TCP/IP networks.

"We're trying to run our network to be cost-efficient with multiple protocols, and our direction is to integrate as much as possible on single platforms," Papadimas explained.

Yves Hartman, product manager for the 3745 and 3746 at IBM's networking lab in La Gaude, France, said TCP/IP performance testing has not started yet. The front-end processors will not handle TCP/IP as fast as dedicated routers can, but they should "match up to whatever the mainframe need is for IP routing," Hartman said.

Even with native routing, the 3745 and 3746 will still appeal mainly to SNA-oriented shops looking to provide mainframe access to their TCP/IP networks, according to analysts. "This is for attaching TCP/IP to the mainframe, not for running the TCP/IP network itself," said Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J.

IBM's tighter embrace of TCP/IP comes far too late for Delmarva Power & Light Co. in Wilmington, Del. Delmarva is replacing SNA with TCP/IP as fast as possible and plans to keep its sole 3745 going only "until I figure out some way to get rid of it," said John Scoggin, supervisor of network operations.



Oracle to launch object tool kit on the Internet

By Kim S. Nash

Oracle Corp. plans to ship its answer to Microsoft Corp.'s Visual Basic development kit Aug. 1, company officials confirmed last week.

Oracle Power Objects, an object-oriented development kit based on Visual Basic, is aimed at users looking to build simple, small client/server applications of 20 or fewer database tables.

Formerly known as Project X, the product was originally due out late last year [CW, April 4, 1994]. Oracle officials declined to specify a reason for the delay.

However, starting July 26, users will be able to order a production version of the kit via an Internet mart at Oracle's World Wide Web site. Prerelease editions have been available for several months.

Pricing has not yet been set, but early users briefed by Oracle estimated that Power Objects will go for roughly half the price of Oracle's enterprise-level development tool set, Developer/2000. That product costs $3,995.

Beta testers said Power Objects includes features not found in Developer/2000 or other Oracle products, such as a drag-and-drop programming feature.

Quick turnaround time is one of the top benefits, said Barry Johnson, a principal at Dynamic Information Systems, a consulting firm in Minneapolis.

Embedded in Power Objects is Blaze, a lithe, 300K-byte database intended to let developers build and deploy applications on low-end PCs and laptops. Blaze is not a slimmed-down version of the single-user Personal Oracle7 database, but it can communicate with larger databases from Oracle, Microsoft Corp., Sybase, Inc. and others, said Marc Benioff, vice president of client/server systems at Oracle in Redwood Shores, Calif.

Also for sale on the Web will be class libraries of objects for routine features, such as name and address fields, built by third-party developers specifically for Power Objects. The classes will cost $25 to $250 each, depending on their complexity, Benioff said.

Client/server jolt

The Oracle Power Objects development kit is aimed at users building small client/server systems of fewer than 20 database tables.

Platforms supported	Windows, Macintosh
Required product	Oracle SQLNet gateway
Availability	August
Price	$3,000* for developer license; unlimited runtime users

*Estimated by beta sites. Oracle plans to specify pricing next week.

Hello? Anybody there?

Switch lets users on different systems communicate

By Suruchi Mohan

Functioning mostly as discrete units, voice-mail systems may be the latest entrants into the connectivity business.

Octel Communications Corp. in San Jose, Calif., last week announced OcteLink, a switch that functions as a distributed messaging post office, letting users on different voice-processing systems — public or private — communicate with one another.



"Its power lies in offering a way of sending messages to everyone you want to and tying into residential voice mail," said Joe Outlaw, a research analyst at Dataprо Information Services Group in Delran, N.J. "[Octel] is in a unique position to do it because of its big market share." Octel owns 23.5% of the voice-processing market.

"This is consistent with our strategy," said Connie Kelly, manager of application development at General Electric Corp. in Fairfield, Conn. "Voice-processing systems could answer telephones, but this is an important electronic verbal mail tool. As we expand trading partners, we want to expand communications."

Kelly has coined the term "electronic voice interchange" to describe the two-way communication that takes place over voice-processing systems.

The idea is simple and draws on the concept of electronic mail. The difference is that instead of sending an electronic text message to someone, users can send a voice message to those inside and outside a company. Here, the voice-processing system is not acting as a telephone answering service, but rather as a message repository.

Voice-mail systems offer the ability to record a message and send it to others in an organization, but they require a point-to-point setup to go to other organizations. The most popularly used protocol that has this function is the Audio Messaging Interface Specification (AMIS).

Dilemma solved

AMIS analog can be used to connect disparate systems to OcteLink, but implementation is not easy. Users would receive richer features if they linked their non-Octel systems using the proprietary Octel protocols.

In addition, as the number of connections increases, so does the management nightmare of maintaining point-to-point connections. A switching device is needed.

This is where OcteLink comes in. It acts as a switch between different systems that want to exchange voice messages. This means that trading partners, customers or even residential customers can become part of an organization's voice-mail system.

News Shorts

Justice Department to Microsoft: Tough it out

The Department of Justice, responding to Microsoft Corp.'s complaint about overly burdensome demands for internal documents [CW, July 3], said it needs the subpoenaed records to nail down the facts in its antitrust probe of The Microsoft Network. In a court filing, the agency said it has not decided if it will block the bundling of on-line access software with Windows 95, but it sketched out some possible theories of attack. Among other issues, the Justice Department said it is concerned about any exclusive contracts with content providers. It is also eyeing whether Windows 95 contracts with OEMs unfairly restrain trade between OEMs and other on-line service providers.

Intuit signs up bank partners

Intuit Corp. announced it has signed up 20 banks, credit-card companies and securities firms to help it provide electronic banking and financial services — the largest such announcement to date. On the list of companies queuing up behind Intuit are The Chase Manhattan Bank NA, Chemical Banking Corp., First Interstate, Wells Fargo, Bank of Boston, First Chicago, American Express Corp. and Smith Barney Shearson, Inc. The deals with Intuit are nonexclusive.

Tandem disappoints

Tandem Computers, Inc. stock dropped $3.25 to $13.25 in heavy trading of 12 million shares Thursday after the company said high research and development costs will drag down its third-quarter operating income. Tandem also said a higher cost of revenue due to a shift from product to service revenue will weigh heavily. The Cupertino, Calif.-based fault-tolerant systems maker said its July 20 report will show revenue climbing 9% from third-quarter 1994 sales of $543.9 million.

EDS adds Internet tools

Electronic Data Systems Corp. last week added its well-known name to the list of firms providing Internet services to businesses. The Plano, Texas, integrator now offers tools to create and manage World Wide Web sites and handle electronic commerce transactions. EDS's home page can be reached at http://www.eds.com.

IconAuthor gets boost

IBM is teaming up with Nashua, N.H.-based **AimTech Corp.** to help develop a new version of IconAuthor, AimTech's multimedia authoring software. Because IBM will also resell IconAuthor worldwide, AimTech will gain fast access to IBM's markets.

Sequent, Compaq team up

Sequent Computer Systems, Inc. and **Compaq Computer Corp.** last week said they are developing a very high-end enterprise platform based on SAP America, Inc.'s R/3 integrated application software. The mixed-environment platform will tie together Sequent's Unix-based symmetrical multiprocessors and Compaq's high-end Microsoft Corp. Windows NT-based ProLiant servers in an R/3 environment.



Help for Win 95 deployment

Microsoft Corp. next month will ship an upgrade of its Systems Management Server (SMS), which provides special tools to aid in deploying Windows 95. SMS 1.1, which also works with Microsoft's recently released SQL Server 6.0, includes sample scripts that evaluate which PCs can adequately run Windows 95 and then distributes the software, a company official said.

Notebooks go for the glitz

NEC Technologies, Inc. in Mountain View, Calif., this week will unleash a new high-end notebook line for the corporate market. Based on Intel Corp.'s 75-MHz and 90-MHz Pentium chips, the highly modular Versa 4000 will come packed with multimedia features. The line offers a choice of three color display types, internal and removable CD-ROM drives and other features such as built-in stereo speakers. Prices start at $3,499.

Visigenic switches providers

Visigenic Software, Inc., a maker of Open Database Connectivity (ODBC) drivers in San Mateo, Calif., is expected to announce this week that it has picked **Informix Software, Inc.** to be its primary provider of ODBC products, replacing **Intersolv, Inc.** ODBC is an application programming interface from Microsoft Corp. designed to let PC applications access data from databases that comply with the specification, such as those from Informix and Oracle Corp.

Boeing Takes Off With The Flying Dutchmen



The Boeing Commercial Airplane Group took off with the 777 this year; they also took off with the Baan Company. About to make a major process redesign commitment, they invited in "The Flying Dutchmen" from Baan Company. The result: Boeing placed an initial order valued at $20 million for Baan's TRITON family of client-server finance, manufacturing, distribution, transportation, service and project management applications.



If you are about to make an ERP decision, Baan's Flying Dutchmen would be delighted to introduce you to a significantly new perspective. One shared by ABB, Hitachi, Mercedes-Benz, Northern Telecom, Philips, Snap-On Tools and ... oh yes ... by Boeing. The worst that can happen is that you'll get a free hat commemorating Boeing's taking off with Baan. Call Baan at 800-889-9818, ext. 1001. Then clear a landing spot, along with some time on your calendar.

BaaN

The Flying Dutchmen

TRBA

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DEC stays ahead of workstation pack

By Michael Goldberg

Digital Equipment Corp. last week pumped out another speed-demon workstation that reportedly sets benchmark records for computing performance with its second-generation, 64-bit Alpha RISC microprocessor.

Maynard, Mass.-based Digital also unveiled a less expensive configuration of its desktop AlphaStatioo 200. At $4,995, the eotry-level, Uoix-based versioo costs $t,000 less than last year's model.

Analysts said Digital's announcement of the AlphaStation 600 is an important indicator of the company's continued technological edge over workstation sales leaders Sun Microsystems, Inc., Hewlett-Packard Co. and IBM.

"In this market, if you don't keep coming out with workstations, you're dead meat," said Jonathan Eunice, research director at Illuminata, a market research firm in Hollis, N.H. Digital is "keeping to a schedule of [releasing] a oew impressive workstation every nine mooths or one a year at least."

Also significant was Digital's announcement of software packages such as Evaos & Sutherland's high-end 3D Freedom Series for engineering and scientific users, said James Greene, an analyst at Summit Strategies in Boston. This application, along with the company's multimedia tools, should help Digital score better sales through value-added resellers, Greene said.

At the New Haven, Cono., laboratory of William Jorgensen, a Yale University chemistry professor, researchers have been working with a borrowed AlphaStation 600 for six mooths. The laboratory turned the machine into a proving ground for modeling the behavior of large protein molecules. "The speed and power of this type of workstation allows more widespread use of large models and faster testing of a hypothesis," said researcher Julian Tirado-Rives.

The AlphaStation 600 comes in 266- and 300-MHz models, which start at $29,300 and $44,995, respectively. Both models can run on Digital's Unix or OpenVMS or Microsoft Cnrp.'s Windows NT operating systems and are available with software packages that support three-dimensional modeling and multimedia software packages.

SGI revamps Indigo 2

By Jean S. Bozman

MOUNTAIN VIEW, CALIF.

Silicon Graphics, Inc. (SGI) revamped the workhorse of its workstation line last week, replacing the 2-year-old Indigo 2 Extreme machine with the Indigo 2 Impact series. In the process, SGI pushed some nf the high-end imaging and graphics capabilities of its $100,000-plus Onyx computers into midrange Impact workstations.

But SGI's Impact machines fall short in RISC chip performance following Digital Equipment Corp.'s annnuncement last week of Alpha workstations with SPECint 92 ratings above 300 (see story above). SGI's machine tops out at 176, although SGI's graphics performance exceeds Digital's, analysts said. A SPECint rating refers to the speed of a RISC chip running a standard benchmark test.

SGI plans to market the Impact systems to automotive and aerospace companies for engineering applications, to entertainment companies for computer animation and to oil and gas companies for seismic analysis. The systems are slated to ship in September.

Impact has two to three times the three-dimensional performance of the older Extreme models, said Tom Copeland, an analyst at International Data Corp. in Framingham, Mass.



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Micro Focus® BridgeWare™

No matter where you start with your 4GL, you'll eventually want it to do something that seems impossible.

There's no denying it. PowerBuilder™ and Visual Basic™ allow your users to do some great things. Linking those desktop app's to your corporate business systems, however, is a fairly daunting prospect.

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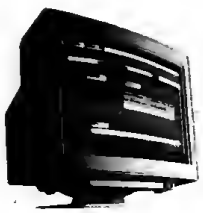
On average, 80% of mission critical corporate data is in non-relational files where it can't be accessed by 4GLs. BridgeWare connects the "islands" of 4GL users to that corporate data, making it more useful, more meaningful and as familiar as your existing 4GL applications.

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Another loss strikes Sybase

System 11 to enter beta July 31

By Kim S. Nash

Sybase, Inc. posted a second straight quarter of losses last week amid takeover rumors and speculation that its System 11 database upgrade will miss a projected fourth-quarter release date.

However, the company vowed that System 11 — its much-anticipated high-performance successor to the System 10 database — is on track.

In fact, the product is "on target and due for beta" by July 31, said Mark Hoffman, chairman, chief executive officer and president of the Emeryville, Calif., database vendor.

Production shipments are expected before the end of the year, Hoffman said.

Some users and analysts have worried that Sybase's surprising financial trouble last quarter, as well as continued efforts to digest the four companies Sybase has acquired in the past 12 months, would divert attention from product plans.

Financial analysts attributed the $9.2 million loss Sybase posted last week primarily to a one-time, $20 million charge related to Sybase's acquisition of French database modeling tools firm SDP, S.A.

Total sales for the period increased compared with the same time last year and beat most Wall Street predictions (see chart).

Yet sales of Sybase's core System 10 database product could have been better, Hoffman acknowledged. "Many things we experienced last quarter, we also saw this quarter. But we made progress," he said.

The growing popularity of data warehousing applications has shone a spotlight on System 10's weaknesses on multiprocessor machines, especially compared with rival products from Informix Software, Inc. and Oracle Corp., said Jim Moore, an analyst at Alex. Brown & Sons, a brokerage in San Francisco.

"They're in a tough spot until System 11 comes out and gets established," he said.

Hot pursuit

Sybase plans to "aggressively go after" the data warehousing market in the next year, CEO Mark Hoffman said. The firm plans to roll out a specialized indexing and query product, IQ Accelerator. One early user said query speed has improve more than tenfold in initial tests of IQ Accelerator. Today, warehousing accounts for 10% of Sybase's business.

Interested parties

Meanwhile, rumors continue to fly that vultures interested in acquiring Sybase are circling.

IBM, Sun Microsystems, Inc., Microsoft Corp. and Electronic Data Systems Corp., among others, have been named as potential buyers in ongoing Wall Street speculation. The firms have denied the notion during the past several weeks, and Hoffman also dismissed the idea last week. "We know of no basis for that rumor. Our goal is to stay an independent software vendor," he said.

Sybase's stock price has careened 28% since early April, when the company completed its first-ever unprofitable quarter [CW, April 17]. Shares traded late last week at $30.63.

"Sybase is vulnerable now with a stock price that low," said Judith Hurwitz, an analyst at Hurwitz Consulting Group in Newton, Mass.

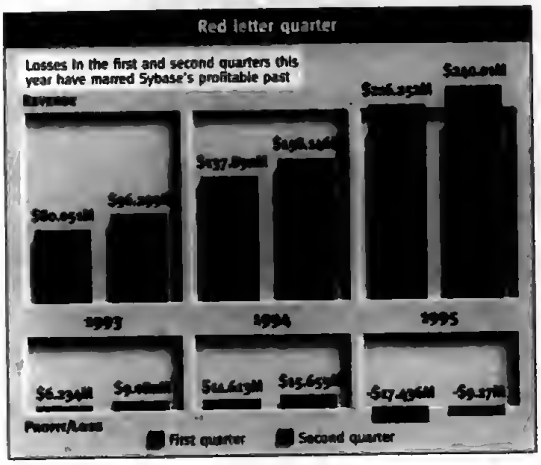
Yet having made their database decisions for the time being, many large Sybase users have sloughed off talk that their vendor is a takeover target.

"From the standpoint of existing users, this isn't particularly relevant," said Linda Morison, vice president of the International Sybase Users Group (ISUG).

Potential acquirers would be interested in buying Sybase for its System 10 database technology, Morison said. "So they'd keep the product line going, which is what we care about," she said.

However, these shadows may worry would-be users who are evaluating System 10 among competing products from Informix, Oracle and others, noted Bill Niemi, North American regional chairman of ISUG.

Informix will unveil an upgrade to its New Era application development tool kit this week. See page 67.



CA takes systems, network management to the next level

By Thomas Hoffman

In a shift from its current CA-Unicenter strategy, CA this week will present an expanded role for its systems management suite that enables users to conduct end-to-end management of systems, networks and individual devices.

At the CA World user group conference in New Orleans, the CA-Unicenter changes will vie for attention with appearances by former President George Bush and a magic act from Penn & Teller. But the CA-Unicenter moves will grab some of the spotlight, as the vendor pushes its premier product onto a broader stage.

With a series of products expected to be introduced at the show, CA hopes to push CA-Unicenter beyond systems management into a wider network management position. One key component will be compliance with IBM's Distributed System Object Model (DSOM), a standard interface that allow objects to communicate with one another.

On tap

CA will announce plans this week to port its CA-Unicenter systems management suite to Tandem Computer, Inc.'s Himalaya parallel processing platform. In addition, CA will integrate CA-Unicenter with UB Networks, Inc.'s LAN management platform.

Keep it simple

DSOM capabilities will enable CA-Unicenter shops to further simplify the management of systems, networks, databases and individual networked components through the use of common object interfaces between operating environments.

As part of the initiative, CA is expected to unveil an alliance with Cheyenne Software, Inc. The deal will allow CA to integrate CA-Unicenter with the Roslyn Heights, N.Y., developer's ARCserve for NetWare, a utility that automatically backs up Novell, Inc. NetWare LANs.

The CA/Cheyenne partnership may foretell future alliances with Intel Corp. and other players in the automated backup recovery space. At least, that is what Dave Dubnick is hoping.

"The route we've taken has been with Intel's Express automated backup package," said Dubnick, manager of technology operations at Commerce Clearing House, Inc. in Riverwoods, Ill. "But if [CA] is doing this with Cheyenne, I'm sure Intel and the other players in this space will follow."

Dubnick's shop uses CA-Unicenter 1.1 to manage its Hewlett-Packard Co. HP-UX and Sun Microsystems, Inc. Solaris Unix environments.

"We're interested in the ARCserve relationship since we use the product to manage our NetWare LANs and would like to get a consistent look and feel across the enterprise," said Brent Moore, a programmer/analyst in the financial services department at Brigham Young University in Provo, Utah.

Win 95/host links grow

By Craig Stedman

Mainframe and AS/400 shops will get a wide choice of products for connecting Windows 95 PCs to host systems within a few months after the much-hyped Microsoft Corp. desktop operating system is released.

But it is expected to be well into next year before large numbers of corporate customers trust the stability of Windows 95 enough to connect it to their data centers.

NetSoft in Irvine, Calif., said last week it plans to ship Windows 95 versions of its basic mainframe and AS/400 connectivity software concurrent with Microsoft's scheduled Aug. 24 launch of Windows 95. Additional products should follow 30 to 60 days later, NetSoft said.

IBM's AS/400 division in Rochester, Minn., said a version of its Client Access/400 software for Windows 95 should ship "shortly" after the operating system is released. Other vendors, such as Attachmate Corp. in Bellevue, Wash., Wall Data, Inc. in Kirkland, Wash., and WRQ in Seattle, expect to start making products available for Windows 95 about 90 days after it hits the market.

Yet many corporate users have said they plan slow and easy migrations to Windows 95. As a result, early demand for host connectivity is expected to be limited, especially in the rarefied air occupied by mainframes and large AS/400s.

Information systems departments first have to "figure out the networking aspects of Windows 95" before they start thinking about tying PCs running the new operating system into their data center systems, said Elisabeth Rainge, an analyst at International Data Corp. in Framingham, Mass.

IBM licensing changes lauded by users. But billing system revamp is years away. See page 63.

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Politicos blazing cyberspace trail

CONTINUED FROM COVER 1

by the conservative Heritage Foundation in Washington, runs on Digital's AlphaServer 2100. Republican presidential candidate Lamar Alexander outsourced the job to Nashville-based Telalink Corp., which uses an Apple Computer, Inc. Workgroup Server 95 running A/UX.

While the 'net reaches only a small portion of the electorate, that has not stopped several Republican presidential hopefuls from putting up Web pages full of speeches, biographical details and family photos (see story at right). Meanwhile, Democrats and Republicans in Congress are racing to see how fast they can announce a techno-hip Web page.

Alexander, former governor of Tennessee, got the digital campaign going Feb. 27 by announcing his candidacy on America Online shortly after appearing on *Larry King Live*. By May, Alexander and presidential hopeful Sen. Phil Gramm (R-Texas) had their Web pages up.

"Campaigns used to start in such places as the Fulton Fish Market and Cadillac Square. Now they start in cyberspace," said Jack Pitney, a former Republican aide and now associate professor of government at Claremont McKenna College in Claremont, Calif.

Guerrilla warfare

A powerful example of this new political stomping ground can be found on the doorstep of Richard and Mary Hartman, a husband-and-wife team in Spokane, Wash. Their Internet-based, grassroots campaign last year — called "De-Foley-ate Congress" — raised $27,000 for advertisements that helped to throw then-House Speaker Tom Foley (D-Wash.) out of office.

The Hartmans were political and Internet newbies, but their guerrilla campaign tactics impressed political pros.

A *Newsweek* poll said only 13% of adult Americans have ever gone on-line and only 4% have ever perused the Web. So the real value of the Internet will be communicating with party activists, for instance, disseminating daily "talking points" and sharing advice across state borders, said Ron Faucheux, editor of *Campaigns & Elections*, a magazine in Washington.

Experts add that the Internet is also a useful tool for what is politely known as "opposition research," digging for embarrassing deeds or flip-flops by an opponent. For example, before turning to expensive on-line databases, researchers can tap into the Library of Congress' Thomas system to search for voting records and statements.

The Internet and on-line services could also transform the way computer-savvy voters do their homework on the candidates' positions. Internet operations such as Project Vote Smart (see list below) provide nonpartisan information brochures on the candidates and their positions.

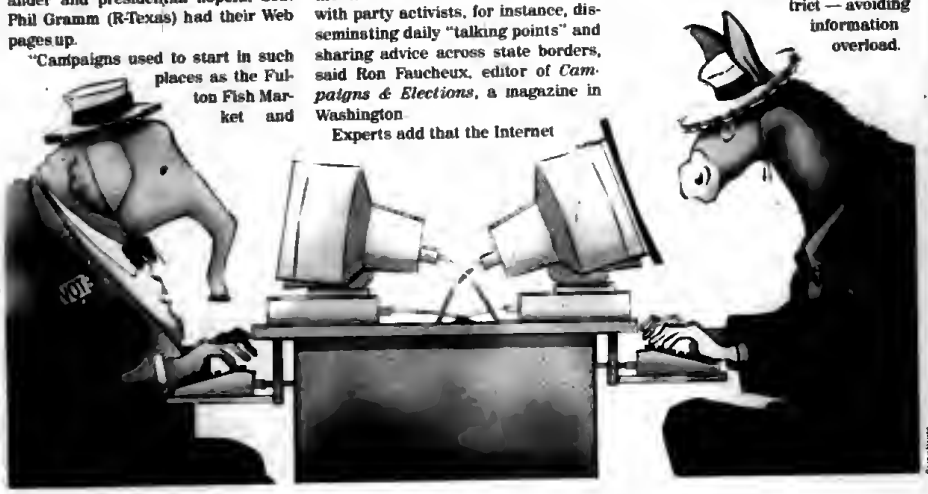
In the future, voters faced with increasingly complex election ballots should be able to get on-line information about only those ballot issues and races relevant to their legislative district — avoiding information overload.

Foreign Webs

Cyberpolitics is an international trend now that the Internet is being used by British, Dutch and Swedish political parties, according to Phil Noble, a campaign research consultant in Charleston, S.C. "They are recognizing, like in the U.S., that politics and the Internet are beginning to merge," he said.

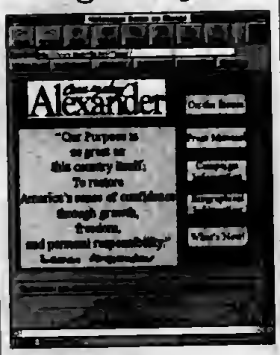
Election nets

The Web site with the biggest number of hits in 1994 was the election site run by the California secretary of state and Digital Equipment Corp., according to Frank Tobe, a political consultant in Santa Barbara, Calif. The election results server had 1.4 million visitors, a Digital spokesman said.



Gary Hart

Page critiques



Lamar Alexander
http://www.nashville.net/~lamar/

The former Tennessee governor's Web site has a catchy opening number: a red-and-black plaid background like the candidate's trademark flannel shirts.

The good news is there is a well-organized menu of Alexander's positions on a wide range of issues but the sound bites are a bit skimpy on details.

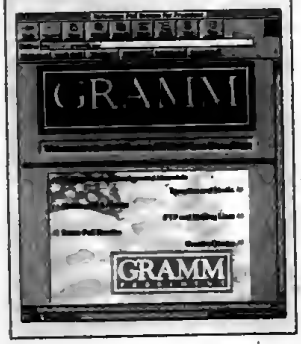
There are also informative campaign newsletters and a schedule of fund-raising events.

Sen. Phil Gramm (R-Texas)
http://www.gramm96.org/

Gramm's Web site has the standard fare of speeches and family photos, plus a unique "Quote of the Day" feature. The server lacks any inside dope on the campaign or campaign schedules, however.

In the "Read My Record" section, you can search recent legislation and *Congressional Record* entries, but there is no handy listing of his positions on key issues or position papers.

The digital photo album needs work: too many tiny photos with captions such as "Phil Gramm with Texas Boy Scout" and "Phil Gramm visiting with senior citizens." — *Mitch Betts*



Political signposts on the infobahn

Democrats

Turn Left
http://falcon.cc.ukans.edu/~cubsfan/liberal.html

Digital Democrats
http://www.webcom.com/~digitals/

Democratic National Committee
http://www.democrats.org/

Senate Democrats
http://www.dscc.org/d/dscc.html

House Democrats
http://www.house.gov/democrats/

Republican

Right Side of the Web
http://www.clark.net:80/pub/jeffd/index.html

Town Hall
http://www.townhall.com/

Republican presidential primaries
http://www.umr.edu/~sears/primary/main.html

GOP On-Line
http://www.gop.org/

Christian Coalition
http://cc.org

Other parties

United We Stand
http://www.uwsa.org/

Libertarian Party
http://www.lp.org/lp/

Nonpartisan information

Project Vote Smart
http://www.peak.org:80/vote-smart/

Gingrich's tech vision needs details

By Neal Weinberg
ATLANTA

U.S. House Speaker Newt Gingrich talked technology with 400 software executives last week and pledged to accelerate the spread of the information technology that he predicted "will transform everything."

Gingrich said he envisions a world in which people "self-apply technology" in their daily lives, using expert systems software, for example, to do their own wills and diagnose medical problems.

He predicted that information technology will "change the whole fabric of government." But government should avoid the debate over pornography on the Internet, the Georgia Republican said.

Gingrich said he wants to help create "a 21st-century, Information-Age, world-market America" in which businesses use information technology to thrive in a global marketplace.

Software industry leaders attending the Cutpepper Forum here said they appreciated Gingrich's interest in high tech but said he faces the same problem in Washington that they face at their companies — turning vision into reality.



KATHERINE LAMBERT

U.S. House Speaker Newt Gingrich *predicts information technology 'will change the whole fabric of government'*

The forum, sponsored by Culpepper and Associates, Inc., a consulting firm in Atlanta, provided small software firms with tips on hiring, selling, marketing and the internet.

Gingrich drew a generally positive reaction from the software executives. "It's nice to see someone with vision instead of chugging along on some old train," said Dennis McGranahan, controller at Tone Software Corp. in Anaheim, Calif. But he said Gingrich was short on specifics and does not seem to grasp the complexity of the issues.

"He's got great ideas, but they all say that and never do anything," said Vigdis Austad, president of Cascade Technologies, Inc. in Edisoa, N.J. She said her company, which sells 401(K) plan tax software, would actually be hurt if Gingrich pushed through tax reform.

Still, Gingrich struck a responsive chord when he talked about his intent to reduce taxation, litigation and regulation. He said the odds are improving that the current income tax system will be replaced by some version of flat tax and/or sales tax. But he also said reshaping the federal government will take time.

"He's got the right ideas," said Don House, chairman of SQL Financials, Inc. in Atlanta. "Here's a guy who understands technology, and he's accessible."

Rich Bohn, president of the Denali Group in Seattle, praised Gingrich for his vision but said, "He's way out on the fringe on some of this stuff," such as the medical self-diagnosis.

Not so, said Walter Borland, president of Emerald Intelligence, Inc. in Ann Arbor, Mich., whose company develops artificial intelligence software systems. He called Gingrich "a 21st-century politician."

Still others were skeptical. "I think he's blowing smoke," said Susan Hughes, vice president of sales and marketing at Persoft, Inc. in Madison, Wis.

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"Changes that used to take months can now be done in days."

Next, we made it scalable. It functions as solidly on the latest technology as it does on mainframes, where it accounts for 20% of the market. This is good news for any company about to embark on a re-engineering project.

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Sun sharpens IS approach

CONTINUED FROM COVER 1

lett-Packard Co. on their home turf.

Bnt Sun cannot wrest IS dollars away from mainframe shops without changing its attitude about service and support, users said last week.

"We've been giving Sun that message for quite a while," said Pete Wagner, director of systems and networks at HCIA, Inc. in Ann Arbor, Mieb., which provides patient clinical data to insurers and hospitals. "I think there was a different mind-set that bad to come into play, and they have made tremendous strides in the last two years."

Among the announcement highlights will be the following:

a Unveiling of high-availability Sun Unix servers that use failover system utilities and replicated databases to assure business continoity in the event any server component fails.



Dunlop Tire's Dennis Courtney *says Sun's weekend work ensured uptime for six mission-critical servers during a July 4 system upgrade*

- A marketing and support alliance with Cray, Amdahl and SAP for Sun servers and Cray servers running SAP's R/3 financial, manufacturing and human resources applications.
- Packaged servers, including applications, database support and consulting services, for specific markets such as telecommunications, financial services and health eare.
- A new empbasis oo corporate data warehousing as a target market. Sun's bigh-end SPARCcenter 2000 20-way servers and Cray's CS 6400 64-way symmetrical multiprocessors will be positioned as network hosts that distill data gathered from legacy and Unix systems.

Sun's attitude change has been a lng time coming, according to some customers.

"We worked extraordinarily bard with them up front to get our relationship squared away in 1991 and 1992," said Mike Williams, senior vice president of eustomer applicatious and technology integration at Federal National Mortgage Association in Washington. Fannie Mae has one or two Sun engineers on site to support 75 Sun servers.

> "I think there was a different mind-set that had to come into play [for Sun]."
>
> — Pete Wagner director of systems and networks HCIA, Inc

Users familiar with Sun's announcement said tbe vendor has figured out that companies want just as much hand-holding from Sun as from their mainframe vendors. And that calls for a greater commitment.

"The whole thing's going toward integrating the processes of your customers with yourself and your suppliers," said Dennis Courtney, chief information officer of Dunlop Tire Corp. in West Amherst, N.Y.

Speaking from experience

Dunlop recently experienced a higher level of vendor support firsthand. For 34 hours during the July 4 weekend, five engineers from Oracle and Sun worked alongside 10 Dunlop IS staffers to install Oracle's Release 10 financials and manufacturing applications oo six servers for 600 users.

Sun's move to consolidate its gains in the commercial market comes at a time when it is drawing roughly half its sales from high-margin servers, rather than from its bistorical stronghold in low-margin workstations.

"It's an image-building campaign about Sun's willingness to invest the amount of resources it takes to be a major player in this market," said George Weiss, an analyst at Gartner Group, Inc. in Stamford, Conn.

Sun will announce its year-end financial results this week. Financial analysts expect the firm to top $6 billion in sales, with aboqt 20% revenue growth.

McCaw protocol to boost CDPD

Wireless users will gain two-way messaging

By Mindy Blodgett

■ McCaw Cellular Communications, Inc. in Kirkland, Wash., last week announced a two-way messaging, Internet-based protocol for Cellular Digital Packet Data (CDPD) networks.

By using the TCP/IP-based system of the new protocol, McCaw officials said CDPD carriers will be able to offer reliable messaging capabilities thot extend the emerprise to wireless users.



McCaw hopes the new protocol, which will be offered to other carriers and applicatioo developers on a royalty-free basis, will jumpstart the lagging CDPD industry. Observers increasingly see the nascent two-way messaging market as filling a growing oeed for users in husiness markets.

CDPD is a digital overlay to the analog cellular voice network that supports short, bursty data transmissions.

Target audience

The prstocol, which was preseoted last week at the CDPD Forum's anoual meeting in Pbiladelphia, is aimed at several devices, including laptops, pagers and the emerging "smart phone" market.

"This protocol could be a great benefit for users, and it really adds functiooality to CDPD," said Dan Merriman, an analyst at BIS Strategic Decisious, Inc. in Norwell, Mass. "Now it will be interesting to see if the momentum builds."

Alan Reiter, editor of "The Mobile Data Report," said offering the protocol without charging a royalty fee is a wise way to spur application development.

"McCaw understands that for CDPD to succeed, it has to reach critical mass witb a certain number of carriers offering the services and a certain nnmber of software developers writing to the protocol," Reiter said.

Jeff Damir, director of product marketing and management at McCaw's wireless data division, said the company has developed a messaging service architecture using tbe Simple Mail Transfer Protocol gateway oo the IP. A message center will provide store-and-forward capabilities for reliable delivery of messages via the CDPD network.

"Devices in the mobile environment are not always turned on. Having a store-and-forward feature eases tbe problem of battery life of mobile devices as well as cost," Damir said. "It minimizes the air time needed to send and acknowledge a message."

Features of McCaw's new two-way messaging protocol:

- Uses Simple Mail Transfer Protocol to extend the enterprise network to a message center
- Message center provides store-and-forward capabilities
- Limited Size Messaging Protocol is based on the Internet Protocol and has an open architecture that is bandwidth-efficient and offers reliable delivery of messages

McCaw, a unit of AT&T Corp., developed the Limited Size Messaging Protocol to offer receipt notification and to be "client-light and server-heavy," Damir said.

While industry analysts said the messaging capabilities will enhance the appeal of CDPD, some said two-way messaging developed on narrowband personal communications serviees (PCS) may beat CDPD out of the gate.

SkyTel Corp. in Washington plans to deploy two-way paging over narrowband PCS in about 300 markets by the end nf the year.

Larry Conlee, a vice president at Motorola, Inc. in Schaumburg, Ill., said the company remains committed to the protocols and devices it bas developed fnr PCS.

Mobile users get messaging capabilities in Geos software. See page 43.

Stratus' Radio tunes in to low end

By Michael Goldberg

Stratus Computer, Inc. plans to release in October a fault-tolerant PC server for LANs tbat will put the company into tbe low end of the market for the first time.

Code-named Radio, for Reliable Architecture for Distributed I/O, the "PC network in a box" will use commodity ingredients such as Intel Corp processors and run on Microsoft Corp.'s Windows NT and Novell, Inc.'s UnixWare operating systems, officials at the Marlboro, Mass., company said last week.

Radio will come in module-like boxes that have eight drawers — two for network connections and tbe rest for disk storage and computing nodes — that users can replace while the machine is on.

The company's softwarp also allows the system to duplicate standard databases such as those from Oracle Corp. and detect software faults. Users could cluster up to 32 of the boxes.

Stratus said no pricing information was available yet, but Radio is sure to be the company's first computer to cost less than $100,000.

Word of tbe PC server has begun to spread throughout the Stratus user community.

Which way?

Analysts said Stratus must clearly define where Radio fits into its product line. Earlier this year, Stratus introduced its Continuum server for enterprisewide applications, using Hewlett-Packard Co.'s PA-RISC processors. Now, it is coming out with Radio.

At the television sbopping network QVC, Inc. in Gosben, Pa., Executive Viee President John Link said he expects to look carefully at the prospect of installing Radio servers in place of Sun Microsystems, Inc. SPARCstations.

Stratns' promise of fsult tolerance could help elimnate the relatively few times the QVC customer order system goes down, be said.

"If it's truly more reliable, that could be of interest to us," Link said. "We'll be looking at this very seriously in the fall."

"This really opens np a new opportunity for Stratus," said Tom Willmott, viee president at Aberdeen Group, Ine. in Boston.

Full house

Yet with its first PC server, Stratus enters "a crowded closet" full of vendors ranging from IBM and its Intel-based products at the higher end to Compaq Compnter Corp. at the lower end, Willmott said. Three other companies — NetFrame Systems, Ine., Tricord Systems, Inc. and Sentinel Systems, Ine. — also claim prodncts that are fault toierant, analysts aasd.

Jim Johnson, president of The Standish Group fnternational, Inc. in Dennis, Mass., said Radio could fill a gap for companies with remote sites that perform mission-critical tasks.

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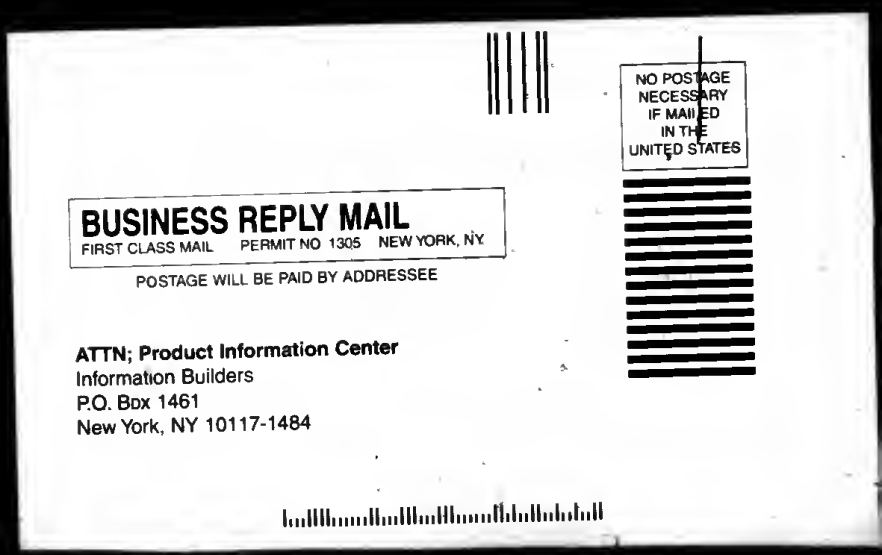
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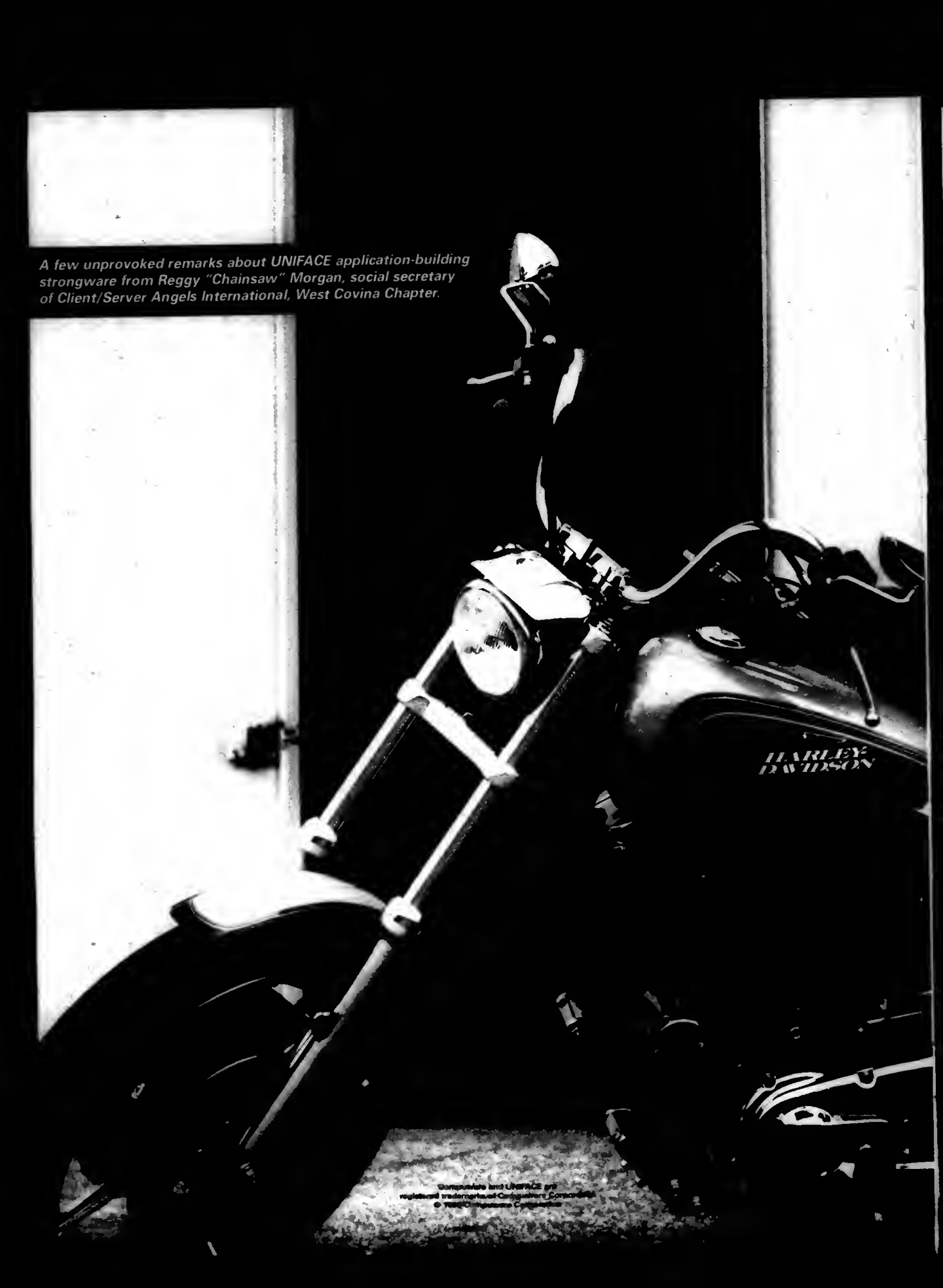


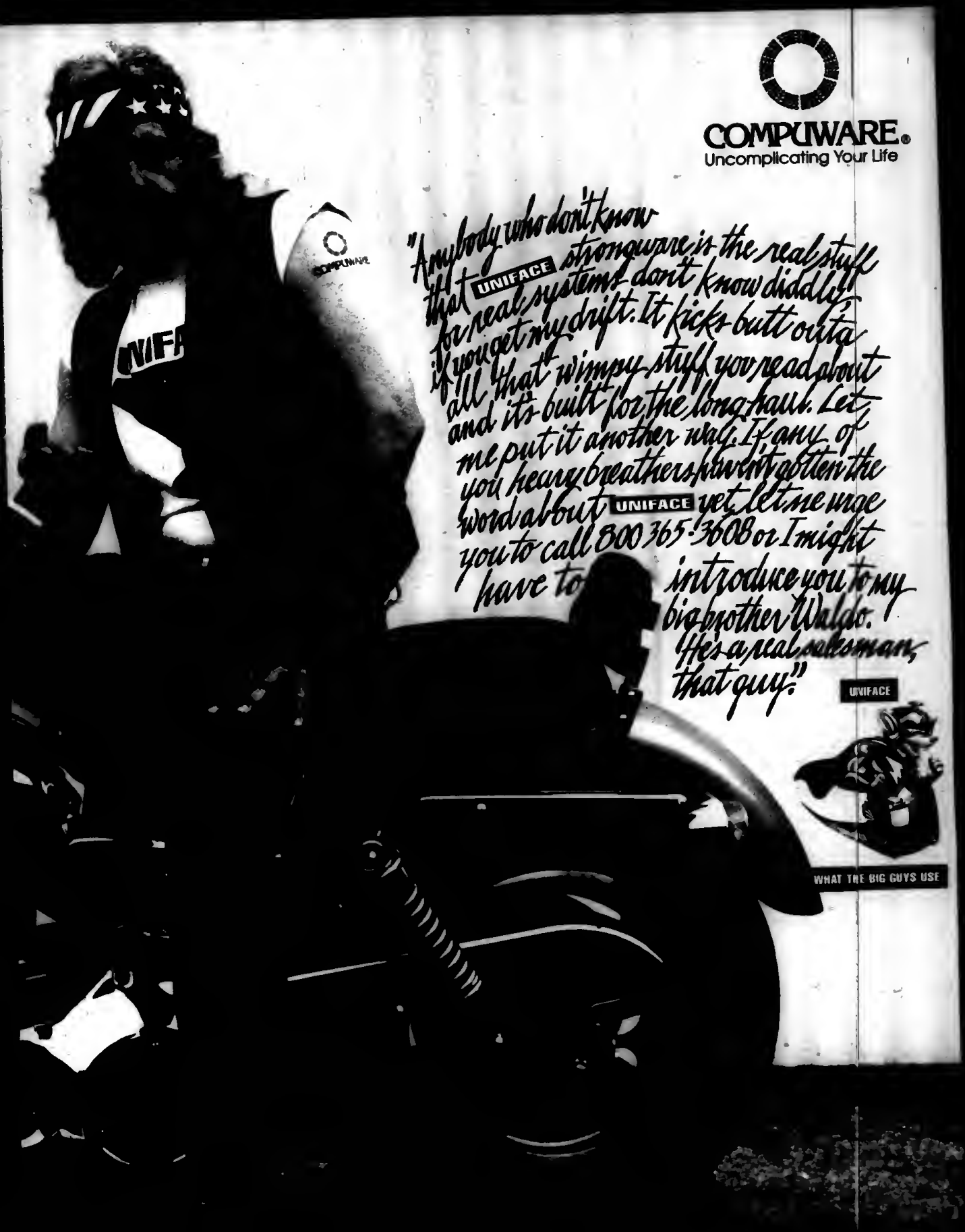
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A few unprovoked remarks about UNIFACE application-building strongware from Reggy "Chainsaw" Morgan, social secretary of Client/Server Angels International, West Covina Chapter.
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UNIFACE
WHAT THE BIG GUYS USE

Cisco's midrange routers get scalable lift

By Bob Wallace

Cisco Systems, Inc. last week announced powerful add-ons to its midrange routers that will enable network managers to scale the devices to meet the needs of fast-growing medium-size companies.

The midlife kicker for the midrange line gives users the cost of having to migrate to the company's more powerful and more costly high-end routers.

"Cisco's strategy is to let users add functionality to the [midrange router] without making them take a big step up to a high-end router," said Daniel Briere, president of TeleChoice, Inc., a consulting firm in Verona, N.J. "Users want to add capabilities as needed, not all at once."

The optional wares let the year-old, three-slot 4000 and 4500 router models support far more remote sites at higher speeds. In the case of the 4500, new interface cards provide greater Ethernet support and an Asynchronous Transfer Mode (ATM) interface.

San Jose, Calif.-based Cisco announced a single-slot Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI) card that can be used to support up to 23 simultaneous inbound 64K bit/sec. connections on one line, or 24 channels if a T1 is used.

ISDN Basic Rate Interface (BRI) lines are often used to link remote offices to larger sites, primarily because they offer much more bandwidth than dial-up links. PRI is increasingly being used at larger sites to handle multiple BRI lines.

Rowdy routers

routers designed for use at midsize sites

	4000	4500	
Processor	Motorola 68030	Mips RISC	Price/ Availability
ISDN Primary Rate Interface	✔	✔	$5,500/ Now
Ethernet Network Processor		✔	$6,000/ August
OC-3 ATM Network Processor Module		✔	$9,500 (multimode); $11,500 (single mode)/ Now

PRI support "is important because our remote sites wanted more bandwidth than asynchronous dial-up [links] supported," said Dave Meyer, a senior network engineer at the University of Oregon in Eugene.

"But without the PRI interface, we would have needed a larger and more expensive router to support all the ISDN clients," he said.

Adding to the deck

Cisco also announced two new interface cards that can be used only on the 4500. One enables the device to support six Ethernet LANs, while the second serves as an ATM interface. The two cards break down as follows:

- The Ethernet Network Processor has six ports, whereas the vendor previously offered only a two-port version for the 4500.
- The OC-3 ATM Network Processor Module supports data transmission over 155M bit/sec. single- or multimode fiber link. It also lets users send IP traffic over ATM links.

Later this year, users under software contracts will be able to upgrade the ATM interface to support standard LAN emulation, which lets users on Ethernet and Token Ring LANs communicate with users on ATM LANs.

LAN emulation enables users to create so-called virtual LANs, which are logical rather than physical networks. This lets network managers build networks on the fly without rewiring.

You wouldn't know it from the slick ads in trade magazines, but it's no secret to corporate developers that most traditional application development tools are difficult to learn, hard to use and ill-suited for many tasks. That's true whether you're developing, deploying or maintaining business applications.

Before development even begins, mastering a tool's design methodology and programming language can present a steep learning curve for application programmers familiar with third generation languages such as COBOL, but unfamiliar with the new breed of visual client/server development tools. This training is both expensive and time-consuming.

Once developers master the various GUIs, databases, languages and protocols needed to create a new application, they must integrate and deploy these components across their client/server infrastructures. MIS departments also must ensure that the application runs on all operating system platforms in the enterprise, that it can be easily moved across platforms, and that all users have the most up-to-date version. Deployment can often be as challenging as development.

Modifying or enhancing a business application requires additional code that must be integrated with the existing application. These incremental enhancements must be maintained for the life of the application. This is a complex process that typically results in maintenance costs exceeding initial development costs.

What organizations need is a client/server application development environment that will:

- Facilitate the rapid creation of strategic business applications
- Enable the automatic distribution and maintenance of applications
- Operate across all leading client/server platforms and networks
- Support remote and mobile users by allowing them to work while disconnected
- Provide robust security
- Interoperate with the leading client/server development tools.

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All of these benefits are made possible by Notes' architecture, which seamlessly integrates a document database, a messaging system and a rapid application development environment. As a platform for integrated messaging and groupware applications, Notes represents the next generation in client/server technology and is an open environment that supports leading APIs and major industry standards.

Once people experience the ease and incredible speed of application development within Notes, they quickly become converts. Notes so accelerates the pace at which users can model, deploy and validate applications, that line of business professionals now work side-by-side with MIS staff to develop and prototype applications at many Notes sites.

By putting the power of Notes behind their application development efforts, thousands of companies are realizing staggering returns on their IT investments and building a new class of communication-centric applications that create lasting competitive advantage.

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Ian Nicolson, Executive Vice President, HVP Division, North American Van Lines

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This finger checks the system memory

This finger inventories monitors



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This finger is a thumb. It's only good for the space bar.

COMPAQ

Center targets SNA-to-LAN migration

Memorex Telex blends services in one location

By Patrick Dryden

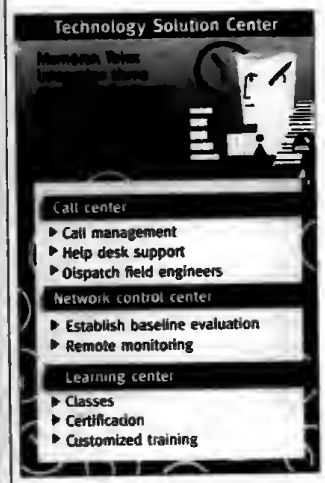
Memorex Telex Corp. last week introduced an integrated service and support center that combines all levels of help for SNA-based organizations trying to deploy and manage LANs.

The Technology Solution Center consolidates services in an effort to enable users to handle complex problems through a single toll-free call.

This step helps Memorex Telex keep pace in the race to provide seamless integration of the many services required to maintain heterogeneous network environments, analysts said.

The Technology Solution Center has a call management center with a help desk that can page and dispatch field technicians; a network control center with remote monitoring capability; and a learning center that can customize training based on problem patterns tracked by the other services.

Such service integration is not unique; major providers and small network integrators offer similarly integrated services, said Traci Bair, an analyst at International Data Corp. in Framingham, Mass. But Memorex Telex had to make the move in order to become a broad supporter of network environments rather than a firm that just fixes equipment when it breaks, she said.



The unified services appeal to one customer that has relied on Memorex Telex to keep its own support staff from mushrooming during migration from an SNA-based network to a Novell, Inc. NetWare wide-area network.

"We've used the training and call center services from Day 1 because we're so dispersed that it's hard to find technicians everywhere," said Robert James, manager of operating systems at Mid-America Dairymen, Inc. "I've been able to keep my support staff the same size in this transition from mainframes to networks."

The $3 billion dairy cooperative now has about 500 PC users at six sites on its WAN who use the NetWare for SAA gateway to access two mainframes at its Springfield, Mo., headquarters. About 700 users still run terminals there and from SNA remote links to 75 offices. The co-op manages its own network and handles end-user help calls to stay familiar with problems. It turns to Memorex Telex for those it cannot resolve.

"We went from 50 to 500 PCs in five years, adding only one person to our support staff and paying one-fifth to one-tenth the cost of hiring experts by outsourcing help," James said.

Memorex Telex has 175 staffers at the Tulsa, Okla., support center, doubling the size of the call center and investing about $100,000 in call-handling software and training, said a spokesman.

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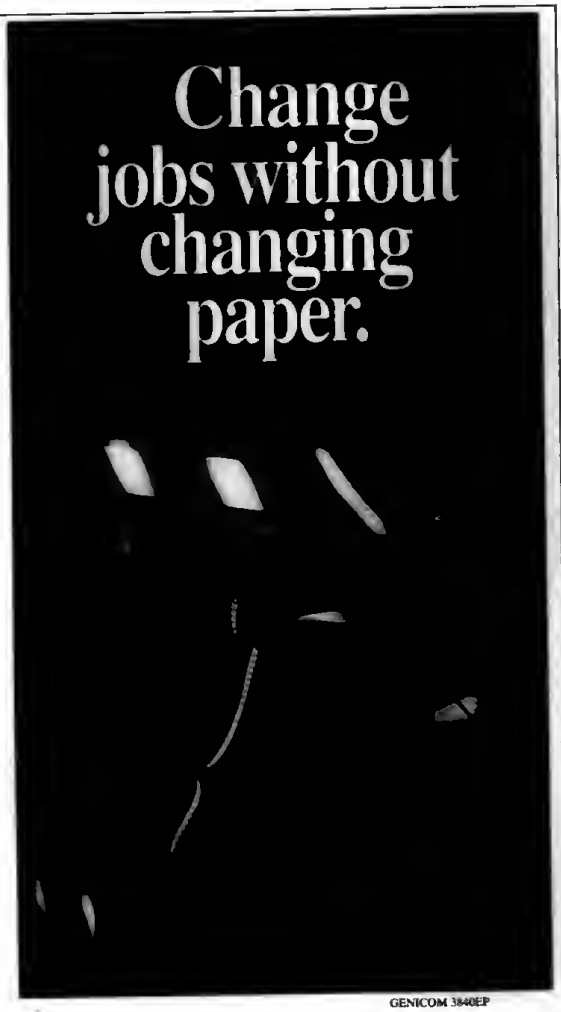
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Oracle graphical applications here at last

Company unveils upgrade to client/server financial, manufacturing set

By Kim S. Nash

The wait is over for Oracle Corp.'s graphical client/server applications.

The company plans to unveil tomorrow a key upgrade to its financial and manufacturing applications set that includes a long-promised graphical user interface (GUI), company officials said last week.

Called SmartClient Release 10, the 31-module suite is due to ship in stages through the first quarter of next year (see chart).

That is none too soon for some users. Oracle originally promised to deliver applications with GUIs before the end of 1994. However, management turnover in the division partially delayed the upgrades, Oracle officials conceded [CW, Feb. 6].

First on the block

The success or failure of Oracle's new applications could also be a gauge of the strength of the vendor's graphical client/server development tool kit, Developer/2000. The SmartClient Release 10 applications are the first programs Oracle has written with the kit.

Potential users have shunned Oracle applicatioos in the past partly because the products lacked a GUI, said Dean Arnold, vice president of worldwide marketing for applications at Oracle in Redwood Sbores, Calif.

SAP AG and PeopleSoft, Inc. — Oracle's primary rivals in the client/server package market — both offer GUIs.

The complexity of SmartClient, whicb was built witb Oracle's new client/server developmeot tool kit, Developer/2000, also slowed the process, said Ron Wohl, senior vice president of application development.

"The goal was not to matcb SAP or PeopleSoft bnt to leapfrog them," Wohl said.

SmartClient Release t0, which was code-oamed Release 10G, includes nine oew modules. Some are uoique to Oracle and are oot found in SAP or PeopleSoft suites. They include the following:

- Web Commerce, for mapping World Wide Web servers to Oracle applications to conduct business on-line.
- Workflow Server, for storing business rules oo tbe underlying Oracle7 database as stored procedures instead of programming tbem into each applicatioos module.
- EDI Gateway, for connecting inveotory systems, for example, to order-entry applicatioos at other user sites.

Shipping dates for a sampling of Oracle's new lineup of graphical applications are:

Now	By September	Q4 1995	Q1 1996
• General ledger • Human resources • Planner workbench	• Manufacturing resource planning • Payroll • Sales compensation • EDI gateway	• Payables • Bills of material • Assets • Capacity	• Inventory • Order entry • Receivables • Web commerce • Workflow server

Price: $12,500 per package*, plus $1,500 to $4,000 per user

*Except for payroll, which is $30,000 per package

Not for everyone

But as much as a GUI appeals to users, not everyone will be able to jump to the new products, said Marie Paz, MIS associate at Boudin Bakeries, an industrial baker in San Francisco.

Before Boudin can upgrade its Oracle Financials suite, the company must move from the Oracle6 database to the Oracle7 version that the applications require, she explained. "That's no small job," she said.

However, once the database upgrade is complete, Oracle hopes to ease the applications upgrade burden by allowing for module-by-module migration.

That is, the Oracle7 database behind the applicatioos will support both new GUI versions and the older Release 9 and Release 10 character-based product. Users will not have to make a wholesale shift to the SmartClient products but can upgrade one package at a time.

Something new

SmartClient will be the first Oracle product set to bear the mark of Oracle's $100 million acquisition of Information Resources, Inc.'s Express line of data warehousing tools. Some decision-support capabilities of Express will be integrated into the new applications.

Such a piecemeal option would have eased an arduous four-day upgrade process that Rochester Midland Corp. recently endured, said Steve Kondolf, manager of manufacturing systems at the Rochester, N.Y.-based insurer.

The company recently moved from Release 10.4 to Release 10.5 of Oracle's financial suite.

On-line recycling exchange wins NII award for its 'real-world' application

Service lets subscribers trade, buy and sell excess or recyclable materials

By Gary H. Anthes
WASHINGTON

Presideot Clinton used it to find recycled rubber for his running track at the White House.

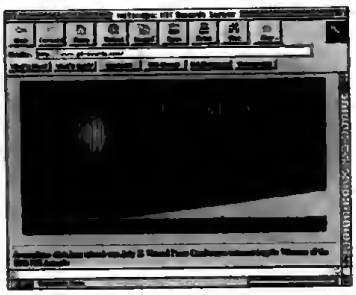
A popcorn manufacturer used it to locate a pig farmer willing to buy eight cubic yards of popcorn each week.

"It" is the Natinnal Materials Exchange Network, one of six winners last week of a National Information Infrastructure (NII) Award. The awards were developed by a group of 70 organizations — including AT&T Corp., Lotus Development Corp. and Price Waterhoose — in recognition of notable "real-world NII applications."

Where to look

Information about the NII Awards can be found on the Internet at http://www.gii-awards.com. Details about the National Materials Exchange Network are at http://www.earthcycle.com/nmen.

The materials exchange uses the Internet's World Wide Web to enable companies to trade, buy and sell excess or recyclable materials. Its users include 5,000 foreign and domestic companies and 50 recycling exchanges worldwide, and its subscriber base is growing at 25% a week, according to Michael Silver, chief executive officer of Pure-Etch Co. in Woodland Hills, Calif.



The NII awards home page *on the Web lists information about award winners and their services*

"The [exchange] database is made up in large part of companies that doo't have recycling programs," Silver said.

"They might bave a surplus chemical to get rid of, or maybe they know they can get a raw material cheaper if someone is generaling it as a by-product instead of buyiog it as a finished good." Some t2,000 materials are oow listed on-line, be added.

Free exchange

At present, tne materials exchange service is offered free to subscribers, Silver said. "If you bave access to tbe Web, you can right now establish an account and, in the same five minutes, list the couch in your office," be explained.

Last week, Earthcycle, the division of Pure-Etcb tbat runs the exchange, annouoced plans to lauoch a "global auction" service that would enable subscribers to offer and bid on materials electronically without using a telepbone, fax machine, electronic mail or commodities exchange.

According to the NII Award sponsors, 550 eotries were considered using a "virtual judging system" that allowed 160 judges to review entries, exchange documents and submit scores lodependent of time and location.

NaviSoft integrates a 'net browser with an HTML editor. See page 57.

The envelope, please

The other NII award winners were the following:

- HotWired, the Internet-based spin-off of *Wired* magazine.
- The Alzheimer's Disease Support Center on the Cleveland Free-Net, a free 24-hour on-line information service.
- DO-IT (Disabilities, Opportunities, Internetworking, Technology), a program to help disabled high schoolers pursue careers in science, technology and mathematics.
- Utah Library Network Initiatives, a service that offers rural residents access to public libraries via the Internet.
- The Information Network for Public Health Officials, set up by the Centers for Disease Control and Prevention, which links public health officials with local clinics, hospitals and other medical organizations.

—Gary H. Anthes



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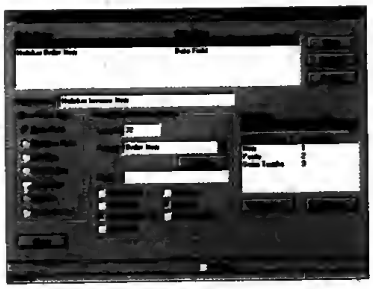
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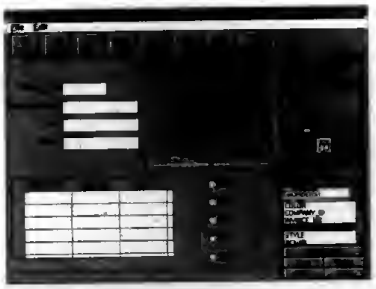


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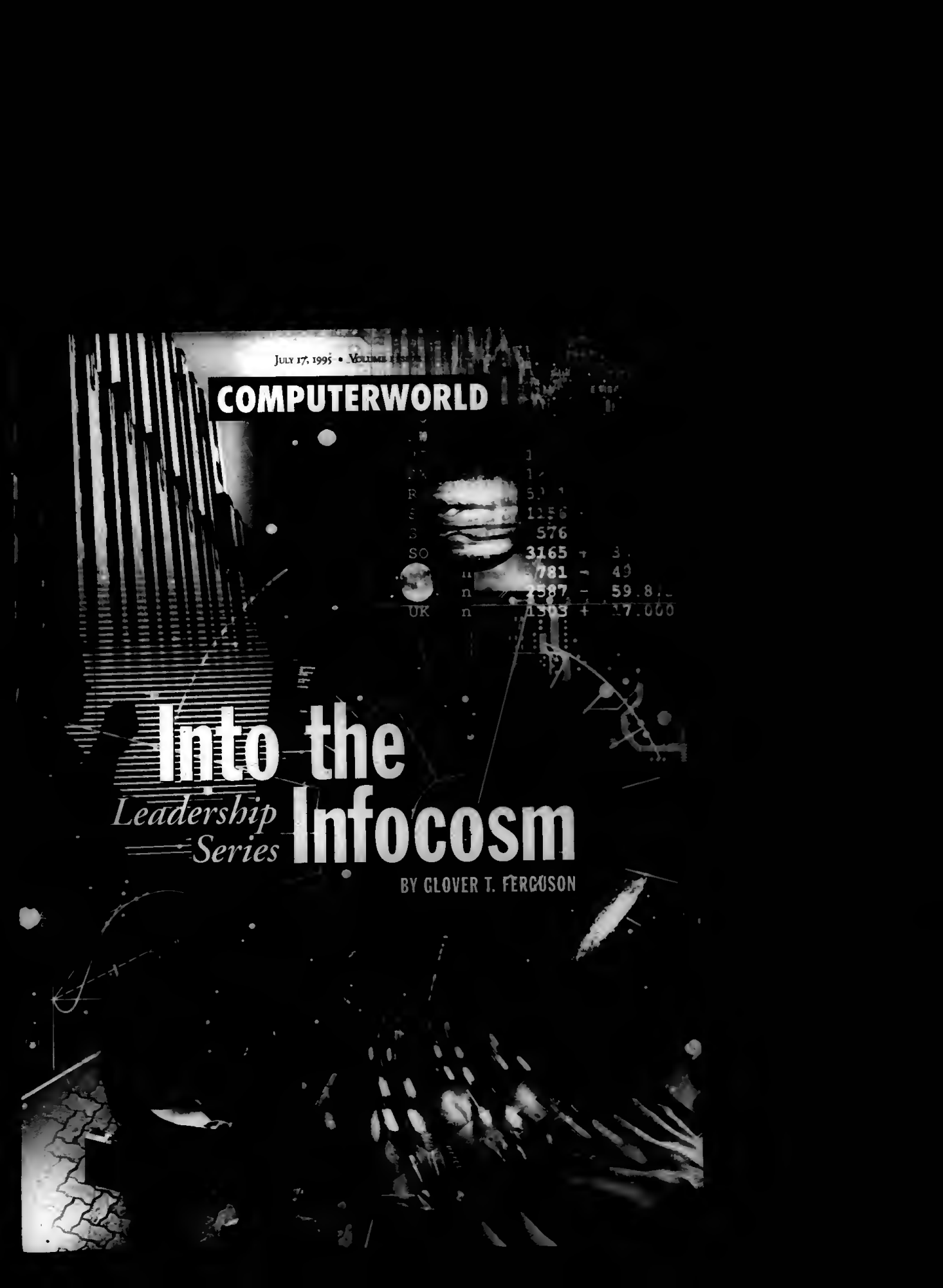


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July 17, 1995
COMPUTERWORLD
Into the
Leadership Series
Infocosm
BY GLOVER T. FERGUSON

Most of us are tired of reading articles about the future based on the metaphor of the information superhighway. We're even tired of reading articles that complain about articles that have been written about the information superhighway.

We remain interested, however, in the future — not the future of the 500-channel couch potato in the year 2000 but the future of business: Where does this highway lead?

In a word, it leads to the infocosm, a world where people will work, learn and play, unconstrained by time, place and form. We can glimpse it today in some applications of leading-edge technology.

Consumers will not enter the infocosm simply because it is there. Purveyors of on-line services and alternative delivery channels will be disappointed if their investments are based on this assumption. People will enter the infocosm to extend their social, economic, educational, recreational and cultural reach and do things they could not do outside the infocosm.

Organizations will enter the infocosm to either seize an opportunity or leap from a burning platform. The opportunity might be to deepen customer relationships, to astound buyers with the innovation and intelligence of a product or service or to cut inbound or outbound logistical costs in the creation or delivery of the product or service. The burning platform is created when the competitor finds the opportunity first and is able to broadcast its innovation to the global marketplace.

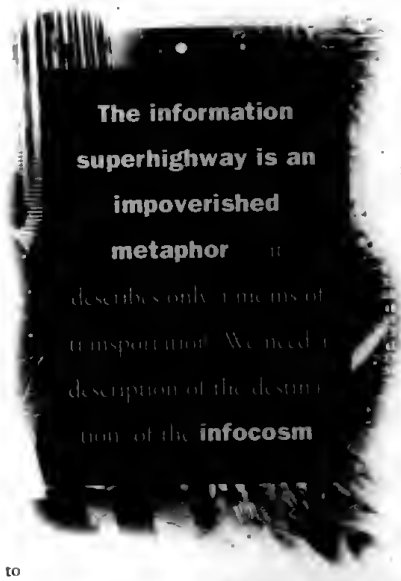
Two techniques are particularly powerful if you use them in concert to understand the significance of the infocosm for business:

- Analyze current instances of the future.
- Consider how inexorable forces will favor or discourage these instances in the future.

Instances of the future manifest themselves in new companies and products that visionary entrepreneurs are developing. Following the metaphor of evolution, these innovations represent mutations that will succeed or fail depending on how well they are suited to the environment. As in evolution, most innovations fail.

Inexorable forces represent changes to the environment and determine whether the mutation will survive, flourish, dominate, die or fall dormant. (See "Divining the Future" on page 3 for a discussion of inexorable forces.)

With this in mind, let's explore four instances of the future that exist in the present and extrapolate what these instances mean to the future of business.



Cover and inside illustrations by Jeff Brice

Glimpsing the Future

1 Competition and Perfect Information

A junior high school student surfing the Internet searches for his favorite Megadeath CD. He finds several vendors in the virtual marketplace, identifies the lowest price for the CD and places an order.

IMPLICATIONS

Intense competition and permanent pressure on pricing are becoming standard operating procedure. Microeconomics once suggested that prerequisites for perfect competition in the marketplace were that buyers and sellers be perfectly informed about the price and characteristics of competing products. The continued growth in the power of computing and communications will permit the assumption of perfect information to approach realization. This applies equally to products and services: We will easily know the best mortgage prices; which doctors have good records; which cities offer the best value for the property taxes they collect; and which TV brands have a history of reliable operation.



The consumer/patient/citizen will be able to demand and get maximum function and service at minimum cost. The producer/provider/agency will be under constant pressure to improve. Few, if any, competitive edges will provide margin shelters for long. You will not be able to count on a nice patent or trade secret to protect you. There is so much data flowing, you will likely see your advantage matched or exceeded in very short order.

RESPONSE

Chief executive officers must look closely at the nature of their business. Are they being hurled into the world of commodities? Chief information officers and information systems managers must apply their resources and expertise to provide further differentiation or support a commodity business.

One characteristic of commodity operation is an intense focus on removing costs from the system. Companies will have to obliterate inbound and outbound logistics channels by finding more direct connections among the key participants in the

DIVINING THE FUTURE

There are "inexorable forces" constantly shaping and reshaping the evolutionary environment of commerce. Three forces have particular relevance to the role of IT in the future of both our private and business lives;

- **Exponential growth**
- **Coovergence**
- **Our humanity**

Exponential growth in the capability of computing is captured by Moore's Law (named for Gordon Moore, co-founder and chairman of Intel Corp.), which holds that every 18 months, chips shrink in size, computing power doubles, and prices drop. Even when the microprocessor reaches its physical limits, improvement will likely continue with the specialization of processors and the lashing together of parallel arrays. The exponential growth io communications bandwidth has also been well documented — remember the highway.

Less well documented is the continued growth in our ability to represent information and knowledge: from numbers and letters to records and relationships among records; froro transaction processing to workflow; from yes/no, I/0 processing to fuzzy logic and neural networks. This knowledge explosion has permitted informatioo technology to permeate our lives through the products and services we use — from personal digital assistants to cellular modems and laptop computers.

Technological convergence is the combination of several previously distinct technologies to create some new capability. The convergence of the internal combustion engine and manned flight shrunk the globe and redefined the geopolitical world order. The convergence of computing, communication and knowledge is redefining the customer's role in the economic process. Just as the printing press took literacy from a few specialists and gave it to the people, the coovergence of computing, communication and knowledge have enabled a greater number of people to directly participate in an increasing number of business processes.

Our **humanity**, however, has not been dramatically affected by either the exponential growth of IT's capabilities or the convergence of computing, communication and knowledge. We have not retreated into our machines or even our home entertainment centers. We continue to crave contact and relationships with other human beings; we continue to climb Maslow's pyramid, seeking to satisfy our needs for food and water, safety, love and self-actualizatioo.

— Glover T. Ferguson

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economic process. Technologies of interchange and connection let business partners work more closely to reduce time to market and to improve cycles of learning in manufacturing and distribution. Dominant standards to facilitate connection and interchange may not emerge for years, but enough exist to permit savvy IS managers to begin designing new processes.



2 Smart Objects

A research scientist I know recently got married, moved to the suburbs and bought a house. Here he was introduced to the joys of home ownership, including water softeners. Every few weeks the doorbell would ring and a man would be there with a 50-pound block of salt for the softener. The delivery did not occur at fixed intervals, but when it did occur, it really was time to refresh the softener.

Finally, the homeowner asked the delivery man how he knew when to bring the salt. His reply: The water softener was smart. When it detected that it was running out of salt, it placed a phone call to the service depot and asked to be fed.

IMPLICATIONS

Intelligence is a source of differentiation, and continuous innovation is a way of doing business.

If I'm in the water softener business, how can I differentiate my product in a way that will allow me to receive a higher price than that charged by my competitors? Until I can invent a softener that doesn't require salt, I can add intelligence to my product and thereby astound and delight my customers.

Innovation used to be something an enterprise could do cyclically. It could make a profound innovation, surround it with secrecy and patents and then focus on continuous improvement to increase markets and decrease costs until it is time for the next major innovation. Perfect information makes it doubtful that even patents would protect a lead for long. Continuous improvement is not enough. Enterprises must also achieve continuous and dramatic innovation if they expect to hold their pricing above commodity levels.

RESPONSE

Management must engineer continuous innovation to maintain success. CIOs can contribute to product and service innovation by applying innovations within their area of expertise, such as making objects smart, mining data about customer wants and needs and creating databases that can be shared across many departments or divisions of the company.



Product design engineers may be responsible for features and functions, but the information technology group must become an integral member of this team if the product is to be of practical use to the customer. For example, a product engineer thought of the water softener making the phone call, but the IT department figured out how to receive the call, process the order and support fulfillment through scheduling and workflow management.

3 Transformational Change

The CEO of a social expressions company — a company that makes greeting cards and wrapping paper — recently got a wake-up call at his 10-year-old son's birthday party. Seven of the 11 guests brought birthday cards they had made on home computers.

IMPLICATIONS

Virtualization and democratization will reshape industries. Virtualization is the ability to reduce many forms of knowledge to a representation of ones and zeros that may be transmitted at almost no cost at the speed of light. Many people can simultaneously share the knowledge, which often replaces physical capital. Groupware, for example, allows any number of people to access the same information, helping speed and simplify decisionmaking.

Democratization speaks to placing previously arcane arts such as typesetting, graphic design and video and audio production in the consumer's hands. Together these forces will reshape industries, destroying some, restructuring others and creating new ones.

The economics of virtualization are so powerful, you can assume that whatever can be virtualized will be virtualized. If mortgages can be brokered on the network and sentiments authored by anyone with a quick wit, traditional barriers to entry fall, and new entrants are inevitable. Economies of scale may no longer be relevant; XYZ Corp. and John Doe can reach the same 200 million Internet users with their value proposition.

RESPONSE

IT managers are on the front line of transformational change. One way they can help the enterprise thrive is to provide early warnings on how technology might invalidate traditional models and assumptions — not just verbally or textually but with demonstrations and prototypes.

For example, CIOs can arrange executive tours of the Internet or demonstrate how telepresence can change a business process. These tours and demos will do more to take management out of the box than five pounds of "white papers."



4 Relationships are Key

Fred learned he could shop for his vacation on the network: He could order his tickets and make all ground, air and lodging reservations from the comfort of his home. Instead, he called Laurie, his travel agent, and asked her to plan his vacation.

IMPLICATIONS

Companies must learn to nurture relationships and recognize what buyers value. A business's dream of actually "hiring the customer" and tailoring products to its specific wishes works only when the customer gets something of value. Automated teller machines are successful because they liberate the consumer from arbitrary times and locations to receive service; they provide real value. At the same time, the bank is, in effect, hiring the customer to act as his own teller.

But how much does that consumer gain when he is allowed to search the universe of vacation possibilities instead of entrusting that activity to someone trained in this area? In fact, the increasing availability of on-line information, constrained by a mere 24 hours a day, may give rise to new businesses that provide information concierge services around specific areas.

We purchase many services and products wherein we value the relationship associated with the purchase. After a business (and its competition) has introduced continuous innovation and continuous improvement, when quality is perfect and prices are low, what will keep a customer loyal? Personal relationships and customer service.

RESPONSE

The IT manager can help the enterprise recognize that personal relationships are critical in the way technology is deployed. For instance, instead of completely automating the ordering process, the IT department can apply the same technology to provide a friendly sales representative with an instant profile and history of his customer. Instead of providing the customer with a computer/video clip interface, the IT staff can develop a live video link to an in-house expert on any aspect of the product or service the company offers.

Where are we going?

The future-coping techniques available to senior managers are similar to the ones a ship's captain uses as he stands in the viewing station onboard a ship that's plowing through a heavy fog. Management's vision of the future isn't clear enough to guarantee that the company will reach harbor without changing course, but it provides a perch from which the company can gain an early, first glimpse of the shape of the land ahead.

It's this early view that provides managers with a basis for an investment strategy, despite the combined stress of change and uncertainty. During dramatic transformation, a company's best strategy is to invest long on trends and short on specific products — an area in which IT management can make a significant contribution.

Developing and deepening customer relationships means knowing your customers, their wants and their inarticulated needs. Technologies such as data mining and interactive forums can improve your knowledge of your customers. Technologies that isolate the customer from the point of delivery will hide valuable input.

Any manager should be loath to bet the company's future on a specific data mining product or even on the Internet. However, the manager should make a variety of investments in vehicles like these so that he has the experience, insight, strategies, business processes and infrastructure in place to seize the day as the infocosm unfolds.

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About The Author

Glover T. Ferguson is director of Andersen Consulting's Center for Strategic Technology Research and of Andersen's Technology Solution Vision Program. He has consulted in systems architecture in many industries and on multiple hardware/software platforms for over 20 years. His Internet address is ferguson@cstar.ac.com.





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Computer Industry

Briefs

Banyan: Loss on $30M revenue

Banyan Systems, Inc. expects to report a loss for the quarter ended June 30 on revenue of about $30 million, compared with revenue of $37 million for the same period last year. Banyan cited extended customer trials before making major purchases, confusion in the market from recent mergers and acquisitions and a transition in sales management for the low results.

AT&T buys into BBN

AT&T Corp. has purchased an $8 million equity stake in BBN Planet Corp., Bolt Beranek and Newman, Inc.'s Internet access subsidiary. This solidifies the partnership between the companies to bring Internet access and services to AT&T customers for the next three years.

Seagate posts profit

Seagate Technology, Inc. reported revenue of $4.5 billion and profits of $260 million for its fiscal year ended June 30. This compares with revenue of $3.5 billion and profits of $225 million for the fiscal year ended July 1, 1994. The Scotts Valley, Calif., company has also expanded its manufacturing operations in the U.S. and Asia to meet the demand for disk drives.

Japanese plan slammed

Six computer industry trade associations blasted Japan's software quality control plan for imported software, saying the measure will raise development costs and act as a tariff against U.S. software firms. Beginning in October, Japanese trade officials will audit a vendor's quality system before allowing software into the local market.

SHORT TAKES Samsung Electronics Co. extended its offer to acquire almost 6 million shares of AST Research, Inc. stock at $22 per share to July 28.

IBM expects profitable quarter

Doubling of income predicted for Q2

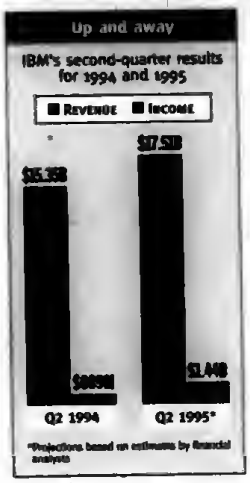
By Craig Stedman

IBM is expected to continue riding a strong financial wave when it reports second-quarter financial results this week. Income should more than double compared with last year's second quarter, and financial analysts predict revenue growth will range from 12% to 16%.

Wall Street has been looking for results of that magnitude from IBM all along, and other computer vendors such as Hewlett-Packard Co. and Compaq Computer Corp. are also thought to have benefited from a healthy second-quarter demand for hardware.

IBM's second-quarter results (see chart) should be "fantastic" thanks in no small part to continued strong mainframe sales, said David Wu, an analyst at S. G. Warburg & Co. in New York. Wu predicted income of $1.5 billion on revenue of $17.8 billion, one of the more bullish forecasts.

Mainframe sales should rise by more than 10% in the quarter and be no worse than flat for the year, Wu said. He added that the IBM PC Co. now appears to be thinly profitable after suffering losses last year of more than $500 million, according to some industry watchers. "The PC business has gone from abysmal to merely bad," Wu said.



Looking ahead

However, several analysts said the wave IBM is riding may peter out a bit in the second half of the year due to softening of the U.S. economy. Other vendors will also feel the pinch, but the Armonk, N.Y., company is particularly at risk because of its dependence on large mainframes and AS/400s, they said.

"Big-ticket items are more affected by economic trends," said William Milton Jr., an analyst at Brown Brothers Harriman & Co. in New York.

He predicted IBM's revenue growth will shrink to 7% in the third quarter and to 2% in the fourth quarter. Income gains should moderate to about 15% by the fourth quarter, he added.

IBM will also have to contend with less favorable currency translations, said Jay Stevens, an analyst at Dean Witter Reynolds, Inc. in New York.

Stevens predicted that IBM's revenue increases will be held to about 9% in the second half of the year.

No one is reaching for any panic buttons, as even the reduced growth expected in the second half will leave IBM in good shape, analysts said.

But Wu said he expects HP to surpass IBM in annual hardware revenue by the end of the decade because of its stronger position in the fast-growing open systems market.

IBM's financial rebound in the past 18 months has come one to a resurgence in mainframe demand and favorable currency trends, Milton said.

IBM changes software licensing policies. See page 63.

Tandem aims ServerNet at new market niches

By Michael Goldberg

■ With its new ServerNet system architecture, Tandem Computers, Inc. is angling to break in to markets that require terabytes of data throughput, such as multimedia on-line transactions, data mining and internetworking.

ServerNet moves data around the computer as it is stored and written. Instead of going through a processor, the data can go directly from peripheral to peripheral, such as disk drives and communications devices. An internal system of switches recognizes if a 64-byte data chunk needs processing or not, said Chris Rooke, Tandem's director of product marketing. The company expects to spend up to $30 million developing the product.

Vaulting to growth

Still, the payoff could be big. ServerNet could be a breakthrough for Cupertino, Calif.-based Tandem. Analysts agreed that the technology, to be announced today, has the potential to vault the company into data-rich applications, such as multimedia transactions, that are expected to grow [CW, July 3].

"People in the investment community realize there's a couple of themes this could hit on. One of the big drivers has got to be the internet" because it often involves moving images and large chunks of data, said Martin Ressinger, an analyst at Duff & Phelps Investment Research in Chicago.

Peter Burris, vice president of Aberdeen Group, Inc. in Boston, added that ServerNet puts Tandem out in front of "interconnect" technology to relieve data transmission bottlenecks.

"You'd like to see Tandem provide some type of big processing data server capability to partake a little bit more in these [kinds of] markets, especially with a Unix type of interface," Ressinger said. He said Tandem, which has lagged behind companies such as Hewlett-Packard Co. in selling mainframe replacements, could do well with ServerNet-based machines on the high end.

ServerNet, while still untested, represents "a proprietary technology that gives Tandem a major break in competing against competitors in the very high end" of the industry — IBM's SP2, for example, and the Teradata models offered by AT&T Global Information Solutions, said Don Brown, chairman of D. H. Brown & Associates in Port Chester, N.Y.

Because ServerNet will run on symmetrical multiprocessors (SMP) and massively parallel processors (MPP), Tandem will have an advantage in the market, too, he said: "SMPs at eight processors is where the sweet spot in the market is."

But even if ServerNet is a breakthrough, it will not take Tandem far beyond its current $2 billion size, Burris said. It "is not going to turn Tandem into a $20 billion company," he said.

Coming down the pike

Tandem's product schedule for rolling out machines with ServerNet is as follows:

- **Late 1995:** Unix-based Integrity symmetrical multiprocessor
- **1996:** Himalaya MPP server with proprietary NonStop Kernel operating system
- **1996:** Windows NT-based server

Customers, meanwhile, said they were tempering their excitement about ServerNet until they see it in action on a Tandem machine. That will not be until late this year, when the company will roll out its next Unix-based Integrity machine with ServerNet inside, Rooke said.

The first Himalaya parallel processing model to have ServerNet, which runs on Tandem's NonStop Kernel operating system, is expected next year. The company also plans to release a ServerNet product that runs on Microsoft Corp.'s Windows NT. No price estimates were available.

Rooke said Tandem is talking with other computer and telecommunications companies about licensing ServerNet; which has 17 patents pending, for their systems.


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On the edge

Tick. Tick. Tick.

That's the sound of the clock winding down to what is arguably the most significant technology introduction in a decade, namely the Aug. 24 launch of Microsoft's Windows 95.

Or is it the sound of a time bomb?

I'm not sure. But *Computerworld*, like every other interested publication, will dedicate more ink to Windows 95 than to any other single event in memory.

We are gathering the last bits of data from a survey of senior-level IS managers listing IS's most critical concerns about Windows 95. We'll run a series of articles on those concerns in the weeks leading up to the announcement.

Boy, people are concerned. Here are some reasons:

The Microsoft Network. This has been the object of the Justice Department's attention, and it is entirely possible that the feds may require Microsoft to decouple The Microsoft Network from Windows 95.



You should hope so. It's not that Microsoft is necessarily violating antitrust laws in bundling The Microsoft Network with Windows 95. Rather, the last thing you, the IS manager, want is universal access to the Internet for your teeming user base. As misguided as they may be, the feds just might do you a favor here.

What will it cost? You'll upgrade to Windows 95 for peanuts — for the operating system, that is.

Will it run well on the 4M bytes of RAM resident on literally millions of corporate PCs? Uh-uh.

Will it plug and play with everything on the networks linking the 40 million corporate Windows 3.11 clients out there? We'll see.

Will you be able to sell a large-scale conversion of your installed base to Windows 95 to your management based on some return-on-investment calculations? No, nor will you likely try. But just try keeping your end users content while Microsoft exhorts them to get cool with Windows 95.

Is it sound? That's a very good question, and I don't have an answer. People much smarter than me say Windows 95 is still bug-ridden. Writing in our sister publication *InfoWorld* recently, Bob Metcalfe, inventor of Ethernet and admittedly no big fan of Bill Gates, wrote that "bugs will not delay the ship date." He also claimed that Microsoft's own programmers are warning of problems with this very complex product.

Every time I write anything suggesting Windows 95 might not be problem-free, I get love notes from Microsoft telling me I'm flat-out wrong. So who the heck knows? But if Microsoft releases a product with significant defects, it will be justifiably drawn and quartered in the court of public opinion.

That's what is on the line here for Microsoft and for the IS manager. Microsoft needs and wants to boost its image with the IS community to prove it is a worthy enterprise computing partner. Goof up badly with Windows 95 and it will set the clock back 10 years. Deliver what it's been promising and everything Microsoft's competitors fear most from this remarkable company will come to pass.

Bill Laberis

Bill Laberis, *Editor in Chief*
Internet: *blaberis@cw.com*



On the outside

Bravo. "Over 40, and you're out" [CW, June 26] is very correct. You don't have to be over 40 to worry about it. Empower yourself and look out for No. 1 — no one else will.

I realized this at the age of 30 when my manager was "downsized" after 27 years with the company. If the company would do it to someone who had made a difference all of those years and sacrificed so much, it would do it to me just as easily.

Empowerment and leadership is based on trust. Without that, we might as well go back to the old carrot-and-stick approach to management.

Shane Allen
Stephen F. Austin State University
Nacogdoches, Texas
G_ALLENMS@TITAN.SFASU.EDU

I empathize with Larry Cooke ["Over 40, and you're out," CW, June 26]. I've been out of work when I should have been reaping the rewards of my efforts. Unlike some other careers, we are in an industry that has changed so vastly that accumulated experience and wisdom are simply markers of obsolescence.

However, to object to his citing the vulnerability of the "white male." Until recent years, white males overwhelmingly populated information systems at all levels. What we are experiencing today is first hired, finally fired.

Alan Gotthelf
Softport Systems, Inc.
New York
alang@softport.nyc.ny.us



A separate power

While I agree with your conclusion in "IBM's PowerPC no threat yet to Intel" [CW, June 26], it strikes me that the user community and industry press have a strangely misplaced perspective on what 32-bit Windows really is.

My company runs a Windows NT/Windows for Workgroups 3.11 network using TCP/IP and NetBeui and has had no problems. In fact, the server has been running nonstop for four months now. In contrast to "accepted" practice, I use the server as my own development workstation and run the full suite of Microsoft's Office products. The applications run much cleaner than on a PC.

Windows 95 is Microsoft's stepping-stone to bring the Windows application developers slowly up to the level of a real operating system such as Unix or Windows NT. Our company is planning to simply skip Windows 95 and convert completely to [Microsoft's] Cairo on workstations and application servers, with our database servers remaining on a Unix system. IBM has pointed its PowerPC systems at this type of environment, and I, for one, laud the choice.

Mike Lemon
Greenville, N.C.
Mike_Lemon@mdl.pdial.interpath.net

Bad medicine

While I feel for the little girl who went looking for forums on girls her age by using the Internet keyword "girls" and found nude shots instead ["'net losses," CW, June 26], I am much more scared by the prospect of using the keyword "BigBrother" and seeing an image of Uncle Sam pop up. Regulation equals restriction. The Internet is bringing this world together in a way never before seen. Don't mess with a good thing.

Scott Burgin
Chandler, Ariz.
sburgin@usasmtp.usagroup.org

More letters, *page 46*

■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

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Internet road hogs should pay more!

Denise Hazlett



Sending 30 minutes of video on the Internet is equivalent to sending 10 500-page books.

Once a sleepy pathway for researchers, the Internet now bustles with the traffic of some 20 million commercial, recreational and academic users. But likening the Internet to a superhighway disguises an important flaw. Highway drivers have one vehicle each, so each takes up about the same amount of space on the highway. On the Internet, one user can take up a lot more space than another.

You can now make telephone calls, conduct videoconferences, listen to the radio and browse the multimedia World Wide Web over the Internet. But these applications consume much more capacity than traditional Internet work such as file transfers or E-mail.

For instance, Internet Phone is a new service that offers cheap international telephone calls. But a one-minute Internet telephone call uses 1,000 times the Internet capacity of a comparable paragraph of E-mail. Sending 30 minutes of video puts as much strain on the Internet as the average user does in seven months — the equivalent of sending 10 500-page books.

Can the Internet bear the strain of this multimedia traffic? The effects of congestion are already showing in delayed and interrupted service, a problem that will only get worse. Adding more computers and phone lines, once a popular solution to Internet congestion, won't work anymore. New high-intensity users are just waiting to soak up extra capacity. While the cost of extra capacity is dropping 30% per year, traffic is rising 100% per year.

The way people pay to use the Internet can't generate enough revenue to free it from congestion. Most Internet charges are flat fees, rather than per-usage fees. We could increase the flat fees to pay for more capacity, but users who pay a flat fee are free to put as heavy a load on the system as they choose.

The sexy new audio-video Internet puts constant demands on a packet-switching network that was originally designed for bursty traffic, such as E-mail, over shared transmission lines. Because each packet gets routed to its destination on a first-come, first-served basis, bandwidth-hogging applications seriously delay other users. The old first-come, first-served rule no longer works.

Instead, we should prioritize Internet traffic according to the value the sender places on speedy delivery. Want extra speed for a message? You can make a voluntary payment to increase priority. If you're willing to wait a second or two, you pay nothing more than usual.

This scheme lets frustrated Internet users do something immediately about congestion. Today, for example, someone placing a voice call with Internet Phone, a service very sensitive to delay, can only wait until later to try again. Under my plan, the caller would pay to increase the message's priority and could continue the conversation without the garbling caused by congestion. I want to give people an option: Continue paying as you do now but suffer delays, or reduce delays by dropping a dime.

It's these phone callers and videoconferencers — the ones who suffer most from congestion delays — who are most likely to want increased priority and have an incentive to pay.

The revenue raised from priority payments would be used to expand Internet capacity. With the government phasing out its subsidies, money for expansion has to come from somewhere. What better way to pay for a service than ask users each time they use it how much they're willing to pay?

Hazlett is an economist at Whitman College in Walla Walla, Wash.

Don't bet your business

Patricia B. Seybold



Microsoft's "enterprise strategy" works for the desktop and LANs, but it's not ready for mission-critical systems.

A few weeks ago, I was talking to the CIO of a large insurance company, who said, "We're adopting Microsoft's enterprise strategy." All of a sudden alarm bells started ringing in my head. "What enterprise strategy?" I asked. "Well, you know, we've had pretty good luck with Microsoft on the desktop and NT SQL Server for our local database applications, and we like the Microsoft story. They're calling the shots in the industry, so we might as well standardize on their architecture across the corporation," he replied.

"But," I countered, "there's more to an enterprise architecture than a pretty interface. What about network management? What about corporatewide E-mail directories? What about large-scale, on-line transaction processing? What about middleware for developing three-tier client/server applications?"

"Besides, who will help you integrate your legacy applications, streamline your business processes or implement shared workgroup systems?" I asked.

"Oh," he replied, "we'll use our usual vendors for all of that: HP, AT&T GIS, IBM or Digital and maybe Andersen Consulting or EDS."

Unfortunately, this interchange isn't unusual these days. Customers are very confused about Microsoft's role as an enterprise supplier. So it's time to set the record straight. *Microsoft has no "enterprise solutions."*

Sure, Microsoft has a set of products and a set of application programming interfaces, most of which are destined to become de facto standards. They're great on the desktop and are rapidly winning on the LAN, but they don't yet scale up to the whole enterprise.

To shed some light on this, we've come up with three categories of recommendations for customers about Microsoft's enterprise offerings: Do it, do it with pain and don't do it.

Do it. It's OK to take the Redmond plunge in the following areas:

- Go to 32-bit Microsoft desktop operating systems (Windows 95 or Windows NT).
- Use Microsoft System Management Server for PC diagnostics, configuration management and software distribution.
- Adopt OLE 2.0 and Win32 for *desktop* application integration.

Do it with pain. This category features recommendations where the Microsoft strategy is technically doable but will cost considerable time and money.

- Build an enterprise E-mail system.
- Achieve interoperability among Windows, Unix and legacy applications.
- Build three-tier client/server applications.

Don't do it. In this final category, we included such "gotchas" as the following:

- Handling network management.
- Building groupware applications. Even Microsoft Exchange, when it finally ships, does not understand the concept of group-owned work or group-owned business processes.
- Building large OLTP applications.

So, feel free to embrace Microsoft's desktop technology and experiment with its LAN-based solutions and departmental application servers. Just don't expect to run your business and manage your wide-area networks or large mission-critical applications with Microsoft technology.

Seybold is president of Patricia Seybold Group in Boston. Her Notes address is Patricia Seybold@seybold@notes.net. Her Internet address is pseybold@psgroup.com



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LAN WorkPlace 5

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Give Apple credit

Usually you folks have pretty clean, unbiased coverage of the computer business. However, your slanted coverage of Apple has been getting under my skin.

"PowerPC players set to make big product splash" [CW, June 5] says "... users will likely find the offerings disappointing, given the lack of native applications software for the platforms." There are almost 800 native applications shipping today for the platform. And while the bulk of the article is concerned with IBM's entries in the market, there's no mention of the more than 1 million PowerPC-based machines Apple sold in the first year of the Power Macintosh line.

"Apple moves Power Macs to PCI" [CW, June 19] states that "the company will introduce ... systems that for the first time depart from Apple's proprietary Nubus architecture and instead sport the industry standard ... PCI bus architecture." Nubus sports IEEE number 1196 (standardization). What standards bodies have been associated with Industry Standard Architecture or Micro Channel Architecture? Who's offering the proprietary solution here?

I read *Computerworld* for complete and unbiased coverage of the industry. You may not be big Apple fans, but that's no excuse for biased or sloppy reporting.

Doug Blair
Apple Computer, Inc.
BLAIR6@AppleLink.Apple.COM

Scare tactic?

"'Stealth users' pose threat to NetWare 4" [CW, June 5] is a perfect example of misinformation for the sake of a jazzy headline. Perhaps the writer's next feature could be titled "Brick walls pose threat to automobiles."

NetWare 4.1 is an extremely secure yet flexible network operating system. It needs to be configured by skilled administrators to really take advantage of NetWare Directory Services. I found this article to be simply a setup for an endorsement of a third-party NetWare Loadable Module.

You should enlighten your readers, not frighten them.

Oryst Kunka
New York
oryk@vesta.cblazers.com

ISDN flies

I agree with most of "Video nondemand" [CW, June 19], but your statement that "Integrated Services Digital Network (ISDN) has flopped, and that doesn't even require new phone lines" is off the mark. ISDN is soaring like a majestic eagle.

ISDN is used heavily throughout Europe and is quickly moving to the U.S. The ISDN market is expected to grow at about 28% a year through 1997, climbing from $2.9 billion in 1993 to $8.7 billion by 1997. I'd like to "flop" a little bit of this growth into my pocket.

By the way, ISDN does require new phone lines called Basic Rate Interface. Most of the local exchange carriers had to upgrade their infrastructures to handle these new digital services.

Mark Danforth
San Francisco
0004276720@mcimail.com

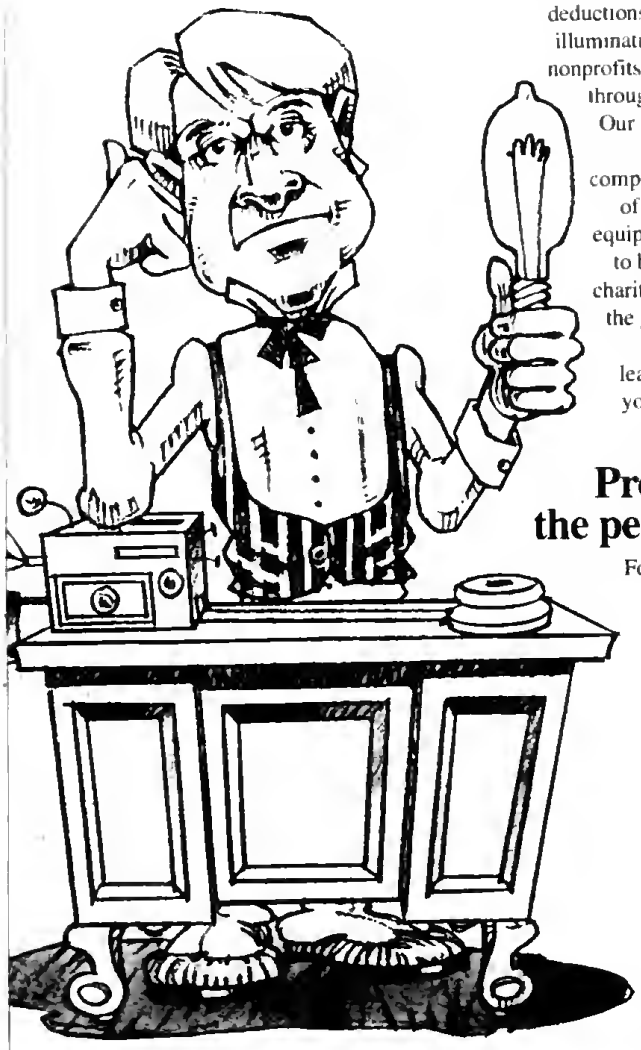
Critical flaws

What's the problem here? The overwhelming majority of businesses and organizations rely solely on PCs for their computer operations. But they aren't mission-critical ["Servers: Staking out the enterprise," CW, June 19]?

The flood of PCs occurred because your so-called mission-critical systems were incapable of producing timely information to the horde of managers demanding it. The ridiculously long response time to requests for information turn mission-critical systems into antiques. So some of the newest systems are doing their best to catch up to the PC development environment, but PCs move forward a whole lot quicker.

Ken Hamermesh
Denver
KHAMER@bms.mhs.compuserve.com

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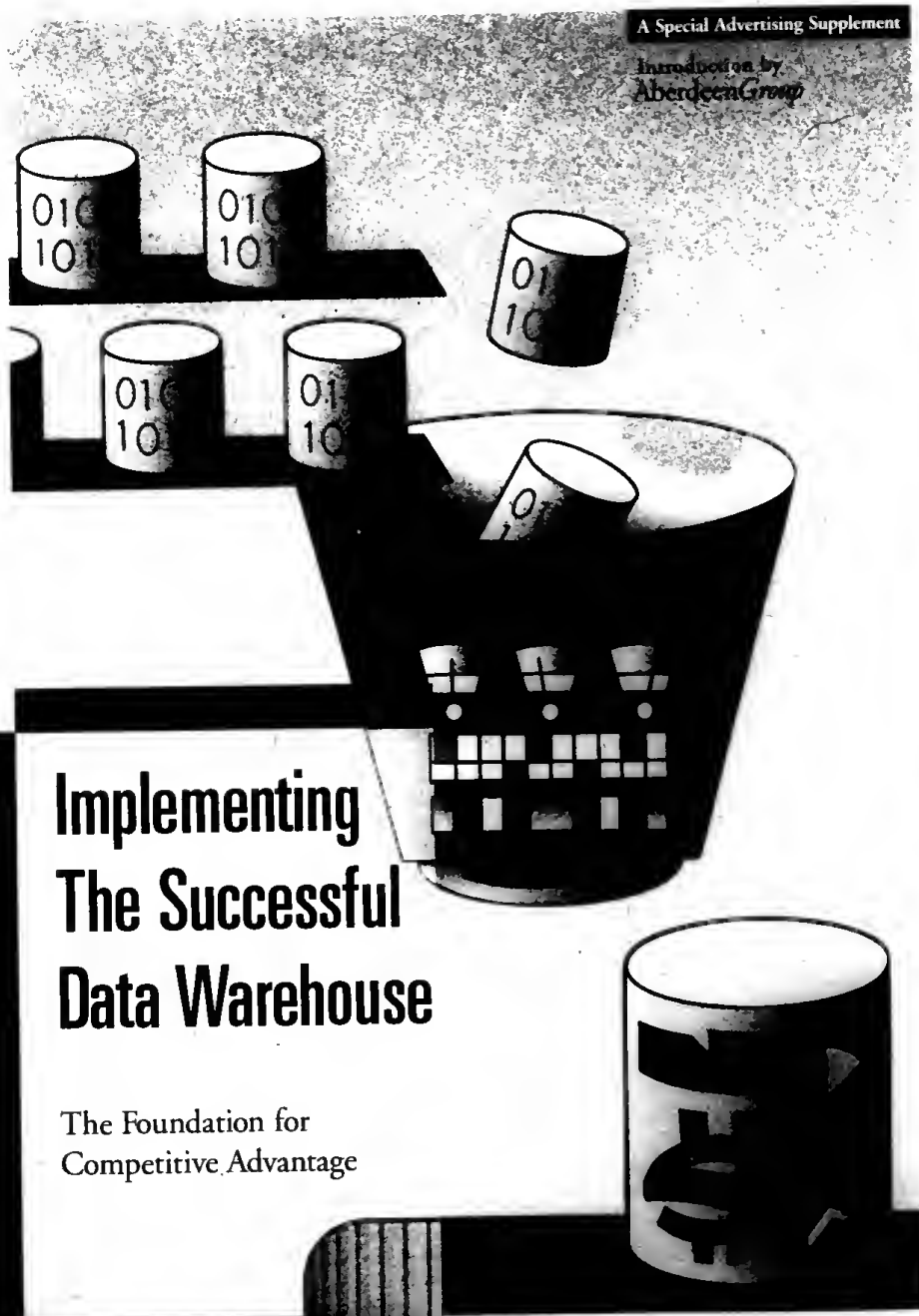
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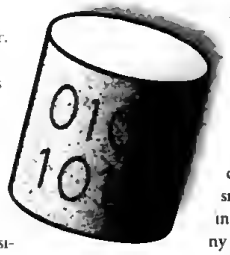
Implementing The Successful Data Warehouse

The Foundation for Competitive Advantage

Transforming Data into Information

Data warehouses allow better decision-making

By Robert Moran
Senior Analyst, The Aberdeen Group, Inc.



A few hundred reengineered enterprises have already changed the playing rules for everyone. These leading-edge enterprises have built the new technology known as the data warehouse, which enables them to understand their customers' buying patterns and preferences, as well as the underlying characteristics of the business itself. An increasing number of organizations are using a data warehouse as a fulcrum to leverage their current information architectures

Data warehousing wrestles with the problem of moving various forms of data from legacy and OLTP systems. It requires preparing, conditioning and staging data so business users armed with powerful desktop tools can perform analyses that previously were either impossible, or too expensive and time-consuming

These on-line collections of data are generally built on an RDBMS, and housed and maintained separate from the enterprise's transaction-processing operational systems. Depending on the scope of their efforts, enterprises using data warehouses will be able to:

- Increase profits;
- Improve knowledge-worker productivity;
- Make sounder decisions;
- Harness unpredictable, subject-oriented information;
- Distribute decision-making;
- Spare the operational databases from ad hoc queries and the resulting performance degradation; and
- Clean up the legacy, while moving the corporate systems architecture forward.

Time and again, data warehouse users point to these benefits. But they also note that using a warehouse is an iterative, ongoing process. Prepare for flux and change, they say. Success generally creates a series of interrelated increases: in the number of users, in demand for faster access to information, in the size of the RDBMS behind the warehouse, and in the complexity of the interacting components.

For these reasons, Aberdeen believes that, to be successful, data warehouse planners should embrace two intrinsic benefits of parallel-scalable computing: its abilities to efficiently *scale up* incrementally by adding more processors as demand for warehouse data grows and to smoothly *speed up* responses to the increasing number and complexity that accompany that growth.

A system supporting more than, say, 50 users and 50Gb of data cries out for the intrinsic benefits of scalable parallel technology. But above this size, the many interrelated data warehouse "technical details" overwhelm less sophisticated technologies, resulting in poor bang for the buck.

While a warehouse derives its information from other enterprise information stores, it reflexively changes the architectures that feed it. To evolve toward an information (as opposed to data) architecture, enterprises must anticipate increases in transaction- and batch-processing loads as well as overall administration.

Enterprises that use parallel-scalable systems for warehouses typically look for the following:

- ***Scalability***, the ability to incrementally add processors and disk drives as system demand grows;
- ***High availability***, including on-line backup and recovery, component redundancy and failover;
- ***Parallel-scalable RDBMSs***, supporting very large databases and the underlying parallelization of queries and query traffic; and
- ***Systems and network management***, including performance monitoring, tape and storage management tools, robust DBMS tools and network configuration utilities.

IS planners looking to build data warehouses, and to leverage their value for the entire enterprise, would do well to seek out hardware and software suppliers that can function as partners offering complete hardware and software systems and service. Aberdeen believes that the combination of supplier expertise and the use of good data-processing planning and practices will enable enterprises of all sizes to harness their IS architectures to capture greater customer delight and meet the conditions of the 1990s and beyond.

Robert Moran is senior analyst with The Aberdeen Group, Inc., a computer and communications research firm and consultancy in Boston

Six Keys to a Successful Data Warehouse

A well-built warehouse can be vital to a company's bottom line

Corporate data is like a vein of ore buried deep inside a mountain. If not easily accessible by a company's decision makers, it remains untapped. Inside a corporation with no data warehouse, only 10% of the knowledge workers can actually create their own ad hoc queries.

But a corporation with a data warehouse can consolidate its historical data into one relational database with a user-friendly front end. Information can be manipulated and analyzed from a business perspective.

Such analysis can have a healthy impact on the bottom line. After a hotel chain realized that a 65% occupancy was break even, it used a data warehouse to analyze historical occupancy rates. The chain learned which hotels were not meeting the 65% rate and ran promotions to attract guests to those hotels. In 12 months, a simple query resulted in significant profit.

But such results are possible only if a data warehouse is properly architected. This hinges on six elements:

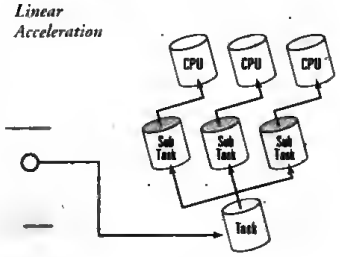
1 **DATA MODELING** is the analytical process of selecting pertinent data from the operational databases, deciding which data to include in a warehouse, and determining how the warehouse will be architected. This data integration consists of tasks such as standardizing the data encoding and naming conventions, and consolidating, transforming and cleaning the data to be delivered to the warehouse.



In terms of architecture, a company must decide if it wants one comprehensive, centralized warehouse or several smaller ones aimed at specific users. The latter concept, called a data mart, has two advantages: it allows a smaller hardware investment and puts information closer to the hands using it. But it cannot provide the enterprisewide business analysis or economies of scale of a central warehouse.

2 The challenge in automating **WAREHOUSE MANAGEMENT** is choosing tools that will perform mapping, extracting and transforming of data; code generation; creation and management of meta data (information about data, such as where it originated); and maintenance of the warehouse. Such functions are supplied by software vendors that specialize in automating the warehouse management process. For example, RDBMS supplier Informix Software and Hewlett-Packard have adopted a best-of-class approach to partnering with these vendors. No one vendor has the expertise to handle the complexity of a data warehouse solution. It is critical at this stage to choose vendors who emphasize partnering as part of their warehouse strategy.

Parallel Speedup

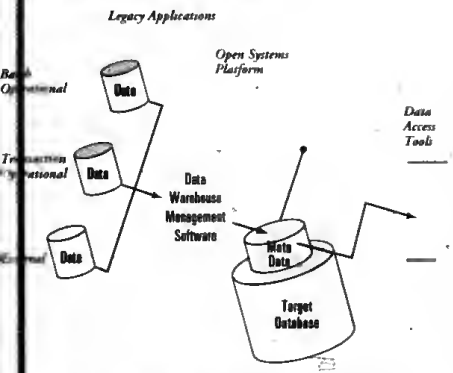


INFORMIX-OnLine Dynamic Server, based on Dynamic Scalable Architecture, provides a significant speedup in processing performance over serial systems. It divides end-user requests into subtasks to leverage multiprocessor hardware architecture.

3 The heart of a data warehouse is a **SCALABLE RDBMS** that includes a parallel processing architecture to provide the performance and availability needed for queries, data loading, data indexing, backups and restores. A system can more rapidly execute a complex query, for example, by decomposing it into smaller subcomponents and processing them in parallel. The application of parallelism to fundamental RDBMS operations has been the means for successfully implementing large data warehouses.

Although some database vendors have designed parallel processing capabilities on top of their database servers, Informix Software's Dynamic Scalable Architecture is the only RDBMS architecture designed with core internal parallelism. With this core architecture, INFORMIX-OnLine Dynamic Server can handle

Data Warehouse Architecture



A data warehouse environment integrates data from a variety of source databases into one target database that is optimally designed for decision support

extensive data queries, index scans, loading, indexing, updates, inserts, deletes, backup and recovery in parallel.

Intelligent data partitioning, which allows tables to be distributed across multiple disks, becomes increasingly critical as a data warehouse grows. INFORMIX-OnLine Dynamic Server provides for intelligent data partitioning to further improve parallel I/O operations and VLDB management. The larger the database, the more important that a system administrator perform database administration tasks, such as archive and restore, bulk load and unload, at the partition level vs. database level. Also, as a warehouse is refreshed with new data from the operational systems, an administrator may take a specific database partition offline, while leaving the remaining partitions available for use.

4 **A SCALABLE, OPEN ARCHITECTURE** is needed to support data warehousing. Openness is critical, since most warehouses interface with a variety of platforms. Scalable means that the platform should scale down as easily as it scales up. For instance, HP offers the HP 9000 Model T500 for data warehouses that stretch into gigabytes. But many corporations will want to supplement the main warehouse with data marts. HP's Intelligent Warehouse software, coupled with HP's wide range of scalable systems, allows all the components of a data warehouse to interoperate as a whole, whether they are centrally located or in distributed locations.

5 Developers and end users need easy access to a data warehouse. Developers need to create client/server decision support applications; users need to use those applications and create ad hoc queries. In selecting **DATA ACCESS TOOLS,** ease of use is crucial.

OLAP, also referred to as multidimensional analysis, has emerged as a powerful and intuitive approach to select, analyze and present historical data from a business perspective. It enables users to view data in a multidimensional format and provides them with more flexibility than traditional analysis tools.

Besides providing query tools, reporting tools and OLAP capabilities via partnering with best-of-class data access tool providers, Informix and HP also provide tools of their own.

The INFORMIX-NewEra programming environment is designed for developing scalable enterprisewide database applications. INFORMIX-NewEra ViewPoint provides GUI-based information access for non-technical business analysts who need decision support information from the warehouse. HP's Intelligent Warehouse simplifies how users view the information from the data warehouse via a framework based on a collection of software, middleware and administrative tools. The contents of the warehouse are presented in terms of a business model, rather than tables, resulting in an easy-to-use, centralized enterprise information access environment.

6 **CONSULTING SERVICES** are important in building a successful data warehouse. A data warehouse spans a range of technologies; the level of complexity involved in building a warehouse should not be underestimated. Users should budget for training on new products and hands-on services.

Because a data warehouse is a long-term solution, users should look for consultants with considerable experience. Informix has strong relationships with several large systems integrators, including HP, and all Big Six consulting firms. HP has been building data warehouses for nine years. The company has developed its consulting techniques through first-hand knowledge in implementing and managing its own enterprise 600Gb data warehouse.

Data Mart Helps Motorola Coordinate Manufacturing Process

When one of Motorola's business units needed to get a grip on its manufacturing schedules, it turned to both Informix Software and Hewlett-Packard to implement a data mart.

Motorola's Semiconductor Product Sector (SPS) unit oversees the design, manufacture and marketing of semiconductors for cellular phones and other products. But because SPS had no decision support system of its own for capturing and manipulating historical manufacturing data, which was supplied from the corporate data center, it was having difficulty making accurate production plans. Specifically, there was no coordination between orders, material purchasing and plant capacity.

"Each marketing person was working independently," says John Shoemaker, senior software engineer for the Phoenix-based unit. Rather than working with a centralized information store, each person, in essence, had their own personal data warehouse. This meant that when it came to orders, inventories and capacities, there were a lot of inaccuracies, a lot of redundant data and a lot of administrative headaches.

To eliminate all that redundancy, SPS decided to create a series of integrated data marts. Once it made that decision, the first thing Shoemaker's unit did was to acquire an HP 9000/T500, then installed INFORMIX-OnLine Dynamic Server as the database server. The basic criteria for both these choices was the same: reliability.

"The HP system just doesn't crash, and it's doing the big work," says Shoemaker. "We get data downloads [from the corporate mainframe] and we do a lot of rebuilding of tables. The system has to be able to build those indexes in parallel with multithreading. The data is available in an instant."

"High availability [of the data] was a requirement from step one. Informix and HP deliver that for us."

John Shoemaker, senior software engineer, Motorola

Informix won out over other database vendors because its parallel core makes it as powerful as the HP hardware on which it resides. "We needed to do parallel index builds. High availability [of the data] was a requirement from step one," says Shoemaker. "Informix and HP deliver that for us. It also does parallel backups."

SPS still uses Motorola's corporate mainframe to obtain the data it needs on materials and capacities. But now, once SPS has that data, "we can instantly summarize it, process it, and generate a report," says Shoemaker. In fact, the data mart automatically spews out hundreds of reports, covering most of the information that the company's users need. And if they want more detail, they now have the ability to conduct further queries themselves.

Another plus is the degree of automation Motorola was able to build into the system. Data is available 24 hours a day. With INFORMIX-4GL programs written to monitor the loading and compiling process, the system essentially runs itself. If an event fails to happen as programmed, it can self-correct or contact the IS department.

Moreover, by writing a forecasting system using INFORMIX-4GL, SPS was able to accomplish its ultimate goal of managing production schedules. It is now in the process of migrating the forecasting system to object-oriented INFORMIX-NewEra.

And because the system can scale down as easily as it scales up, SPS is now considering installing regional data marts at its offshore sites. According to Shoemaker, this would allow Motorola to cut some of the costs associated with "the bandwidth required to support remote users."

MOTOROLA

INFORMIX DYNAMIC SCALABLE ARCHITECTURE™

Data Warehousing: Don't Try It Without Informix and Hewlett-Packard.

If you're thinking about building data warehouses—whether gigabytes or terabytes in size—you're not alone. Hundreds of organizations are designing and deploying data warehouses for competitive advantage through advanced decision making. And many of them—like Transamerica Commercial Finance, The Home Depot, and DHL Worldwide Express—are making the move with the leaders in data warehousing, Informix and HP.

Why? Because Informix and HP have joined forces to provide best-in-class, client/server-based data warehousing solutions. Together they create a unique combination of superior technology, data warehousing expertise, and strategic partnerships, that offer you

- An open environment to build powerful, customized data warehouses
- Advanced Solutions Centers for you to model and test data warehousing and parallel processing solutions
- Joint consulting and systems integration services

HP and Informix technologies are a perfect fit for data warehouse applications. That's why Carole P. Hershman, vice president and chief information officer of Transamerica Commercial Finance Corporation, says,

"The HP and Informix data warehousing solution is the best choice, due to Informix's Dynamic Scalable Architecture and HP's strong customer focus and high-performance servers."

Informix and HP: The Data Warehouse Advantage

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UPDATE

No. 10

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SMALL VENDORS TO TAKE BRUNT OF PC COMPONENT SHORTAGE, 44
NEW PRODUCTS, 45

Desktop Computing

PCs AND SOFTWARE • PORTABLE COMPUTERS

Potent portables rival their desktop brethren

By Jaikumar Vijayan

The already-shrinking performance gap between portable computers and desktop PCs is now even smaller.

Faster processors and performance boosters — such as more disk space and memory, higher-resolution color monitors, better port replication and longer-lasting batteries — are giving portable computers an increasingly persuasive story to tell in the desktop replacement market.

	Standard business desktop PCs	High-end portables
PROCESSOR	90- or 100-MHz Pentium	75- or 90-MHz Pentium
MEMORY	8M to 16M bytes	4M to 8M bytes
DISK DRIVE	540M to 1G byte	540M to 810M bytes
VIDEO	PCI local bus/up to 2M bytes	VL local bus/up to 1M byte

"From a pure performance point of view there is going to be virtually no difference between portable computers and desktop PCs" in the next few months, predicted Andrew Froning, managing editor at National Software Testing Laboratories, a PC testing and benchmarking laboratory in Conshohocken, Pa.

The organization recently ran performance benchmark tests on more than 30 models of 486- and Pentium-based portable and desktop PCs. Except in certain graphics-intensive and a few memory-intensive database applications, portables today perform as well as their desktop counterparts when dealing with standard applications such as word processing and spreadsheets, Froning said.

What's up

Giving mobile computers this horsepower is a technological trend that includes the following innovations:

- Faster, lighter, smaller and lower-power chips that have closed the processor gap between desktops and portables. Intel Corp.'s mobile strategy is putting 75- and 90-MHz chips into high-end portable products just as the chips are becoming widely available on corporate desktops.
- Increased modularity and integration. As portable technology matures, more of what used to be outside is getting integrated into the system. For instance, high-end notebooks from Toshiba America Information Systems, Inc. and Compaq Computer Corp. come with built-in AC power adapters.
- Better desktop expansion capabilities, such as a full array of ports for plugging in an external monitor, printer and keyboard or mouse. Vendors also offer docking options that can turn the portable into a full-fledged multimedia system with a quad-speed CD-ROM and 16-bit audio.
- Larger screens and better resolution that give portables a desktop-like look and feel. By the end of the year, high-end portables are expected to offer standard 11.3-in. active-matrix monitors.

The advent of Microsoft Corp.'s Windows 95 with its inherent Plug and Play capabilities is also expected to increase demand for docking stations, according to Ted Julian, editor of "The Gray Sheet," an industry newsletter published by International Data Corp. (IDC) in Framingham, Mass. This is because Windows 95 will make it easier for mobile users to hook into corporate networks through docking stations, Julian said.

Such performance gains are spurring an increasing number of users to purchase portable computers as replacements for their traditional PCs. In fact, according to a 1994 year-end survey of 186 corporate users by IDC, as much as 36.4% of recently acquired portables were purchased as desktop replacements.

"It really is a matter of convenience. You pretty much carry a virtual office with you wherever you go," said Nagesh Rao, knowledge systems manager at Diversey Corp., a specialty chemical manufacturer in Livonia, Mich.



Yellow Freight System's *automated sales system means sales representatives now come into the office only one day a week*

Trucking firm nets automation payback

By Julia King

In the highly competitive, fast-moving business of long-haul trucking, sales ride on a company's ability to answer customers' questions quickly and accurately.

Recognizing this, $2.2 billion Yellow Freight System, Inc. in Overland Park, Kan., is rolling out an automated sales system to its 800-person sales force.

The system gives salespeople direct access to mainframe-based data on rates, routes and the status of customer shipments. It also puts customer information now stored on laptop computers at their fingertips.

Another differentiator for the system is its ownership by the sales department rather than the information systems organization.

"To me, not being from IS is a key component of success," said Tim Abraham, Yellow Freight's project manager. He was pulled from his job as a sales manager to head up the automation effort.

"When sales owns the system, support is automatic because they are not going to let their own project fail," he noted.

All aboard

Comprised of Sales Technologies, Inc.'s SNAP software, Microsoft Corp.'s Office suite of business applications and Xcellenet, Inc.'s RemoteWare electronic-mail software, the new system is expected to be deployed companywide by the end of this month. To date, Yellow Freight has brought up several hundred users.

But already the system has demonstrated several key benefits, company officials said. The first of these is a 30% increase in "face time," which is the time salespeople spend with customers.

"There is a big efficiency that is gained because [sales] reps now only come into the office one day a week," said Mike Holtzer, sales manager at the company's Denver office, one of the first to be brought up on the system.

Previously, he said, sales reps were in the office or freight terminal every morning to complete administrative work and retrieve customer information — a practice that cut into selling time.

Moreover, now that the bulk of

Trucking, *page 44*

Geos adds universal mailbox library

Spruced-up operating system attracts hardware makers

By Mindy Blodgett

Geoworks, Inc. recently enhanced its Geos operating system software by adding extra mobile communications power, such as messaging and wireless support, to handheld devices.

The focal point of Geos 3.0 is a Universal Mailbox Library, which allows users of mobile computers to send, receive, store and forward messages via voice, fax, electronic mail and paging. Existing wireless networks and protocols are supported, said Gordon Mayer, president and chief executive officer of Geoworks in Alameda, Calif.



Mayer said several hardware makers have licensed Geos for use in building personal digital assistants (PDA) and digital communications products such as smart phones, which provide cellular phone and wireless data capabilities.

Mike McGuire, an analyst at Dataquest, Inc. in San Jose, Calif., said the refreshed Geos could bolster the flagging PDA market.

"The first versions of [Geos] were sort of tainted by the cool reception to handhelds, including PDAs," McGuire said. "But this version really represents the next level of communications for handheld devices."

Geos 3.0 supports standard communications protocols such as TCP/IP, giving users access to Cellular Digital Packet Data networks and Serial Line Internet Protocol/Point-to-Point Protocol, which connects users to the Internet. Also supported is broadband personal communications services (PCS) protocols and SkyTel Corp.'s two-way paging and narrowband PCS network.

Trucking

CONTINUED FROM PAGE 43

this data is stored on each sales representative's NEC Technologies, Inc. Versa notebook computer, "the proverbial, 'I'll get back to you' has been eliminated," Holtzer explained.

A second benefit is the improvement in working conditions for on-the-road account managers such as Lou Mattingly, who is also based in Denver.

No budging
Between 60% and 70% of top salespeople refuse to use automated sales systems, said Ken Dulaney, an analyst at Gartner Group, Inc.

"I now have the freedom to dial in to the mainframe early, then leave the house by 8:30 a.m. to be in my sales territory an hour and a half earlier than before," Mattingly said.

That head start is a major advantage "since the secret to most trucking sales is the ability to stand face-to-face with customers and act as their ombudsman with shipping or as a transportation consultant," he noted.

Of particular usefulness is the system's mail capability, Abraham said. It enables reps to electronically exchange individually designed logistics and transportation plans that might be applied to other customers, he explained.

Eventually, this practice will be formalized with the creation of a solutions database, which like all other parts of the system will remain under the control of Yellow Freight's sales unit.

Joyce Gavenda, an analyst at Summit Strategies, Inc. in Boston, said sales system ownership is a critical issue. "Historically, most first efforts at sales force automation have not been successful," Gavenda said. That is mainly because "IS developed an automation program without taking into account the real needs of the sales force and how they would be using it."

Market outlook

Small vendors to take brunt of PC component shortage

By Rob Goth and Terho Uimonen
TOKYO

Key PC and component makers in the U.S., Japan and Taiwan expect worsening shortages of a range of components, including memory chips, CRTs and batteries for high-end notebooks, by year's end.

The impact of the shortages will depend on the status of the global PC boom at the end of the year, analysts said. Second-tier vendors may shoulder the worst of the situation, as component makers favor their largest customers, said Katsushi Shiga, PC analyst at Dataquest Japan K.K.

"What's limiting the amount of PCs that can be sold right now is getting the components to go in them. We're out there scrambling like everybody else," said Chet Pribonic, vice president of mobile products at AST Research, Inc. in Irvine, Calif., which manufactures its notebooks in Taiwan.

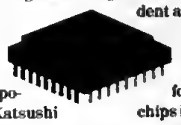
Running low

Vendors are particularly concerned about the dynamic RAM chips used for a PC's main memory. DRAMs are already in such short supply that vendors are dipping into the spot market, which means they buy at today's prices instead of the usual practice of locking in prices for a predetermined period of time.

Although Japanese and Korean vendors are furiously ramping up production to meet the DRAM demand, most of the increase in volume will not come until next year, according to officials at those companies.

In the meantime, sales of memory-hungry applications written for Microsoft Corp.'s forthcoming Windows 95, coupled with the proliferation of high-end Pentium systems, will further tax the limited supplies, according to officials at systems makers and component suppliers.

"In the second half of fiscal '95, we will see a serious shortage of DRAMs," said Hajime Sasaki, executive vice president at NEC Corp.



AST has high hopes for its relationship with Korea's Samsung Electronics Co., the DRAM market leader, which recently invested in AST. But for now, the PC maker must seek the high-priced chips in the spot market, Pribonic said. Samsung, "like everybody else, has capacity constraints. They've got allocations going out for many, many months. For us to show up and say, 'Hey, now we're cousins, where are our DRAMs?' doesn't work," he said.

Hot tickets
Asian monitor manufacturers are also scrambling, with demand for CRTs currently surpassing supply. Manufacturers based in Japan, South Korea and Taiwan currently supply some 93% of the world's CRT monitors, according to Taiwan's government-funded Market Intelligence Center.

DRAMs are not the only memory chips in short supply. Static RAM chips — such as the 256K-bit SRAMs that are common in Pentium-based systems — are also being allocated by leading suppliers such as U.S.-based Cypress Semiconductor Corp., officials said.

"We expect the SRAM shortage to last throughout the year," said David Fleischer, Cypress' Singapore-based director of Asia-Pacific sales.

Meanwhile, the growing demand for better battery life in notebook PCs, coupled with PC makers' reliance primarily on Sony Corp. for lithium ion batteries, may lead to constraints on high-end notebooks by November and delay the appearance of the long-life batteries on lower-end systems.

Goth and Uimonen are writers at the IDG News Service's Tokyo bureau.

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Briefs

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AT&T Corp. and the U.S. government recently announced Telecommute America, a program to promote telecommuting and virtual offices with seminars, exhibits and information packets. For more information, call (800) 835-3933.

No ergonomics standard

The federal Occupational Safety and Health Administration has curtailed its plan to issue an ergonomics standard to combat repetitive stress injuries because of opposition in the U.S. Congress and business community.

Calling all Aussies

Westinghouse Electric Corp. in Baltimore has created an advanced mobile satellite telephone system designed to connect the Australian continent to its coastal waters. The Westinghouse Series 1000 Mobile Satellite Telephone System will provide service throughout Australia and up to 120 miles offshore. It will offer voice, data and fax communications for mobile users on land, maritime and fixed locations. The system will be especially useful for the many remote areas of Australia where communications are difficult.

Amoco goes SmartStream

Amoco Canada Petroleum Co. has completed the installation of Dun & Bradstreet Software's SmartStream Financials client/server software. SmartStream will enable Amoco to access its host-based general ledger system and deliver data to users on desktop PCs.

Chase unveils trade system

The Chase Manhattan Bank N.A. has introduced Chase Trader, an integrated foreign exchange trading and payment system. Chase Trader is a component of Chase Insight, a suite of Windows-based global treasury management applications.

Software Publishing Corp. has announced Harvard Spotlight 2.0 for Windows, presentation software.

Harvard Spotlight 2.0 for Windows is a 32-bit application designed to run under Microsoft Corp.'s Windows 95, Windows NT or Windows 3.1 using the Win32s Dynamic Link Library.

According to the Santa Clara, Calif., company, Harvard Spotlight 2.0 for Windows lets users rehearse, deliver and organize electronic presentations. It works with presentation graphics packages including Software Publishing's Harvard Graphics, Microsoft's PowerPoint and Lotus Development Corp.'s Freelance Graphics.

Harvard Spotlight 2.0 for Windows costs $469.

▶ *Software Publishing*
(408) 986-8000

Touchstone Software Corp. has introduced Win 95 Advisor, an application to help users prepare their systems for Microsoft Corp.'s Windows 95.

According to the Huntington Beach, Calif., company, Win 95 Advisor rates the user's current system and prepares a checklist of steps necessary before installing Windows 95.

Win 95 Advisor's ratings include hardware analysis, compatibility checker, setup option tutorials, automated setup batch file, preparation checklist, cleanup utility and systems file editor.

Win 95 Advisor costs $40.

▶ *Touchstone Software*
(714) 969-7746

IMSI has introduced WinDelete 2.0 for Windows, a product that removes Windows applications.

According to the San Rafael, Calif., company, WinDelete 2.0 for Windows removes Windows applications from a desktop to increase hard drive space and improve system performance. It monitors application installation to enable better application removal, covers every type of application and system support, previews its changes before making them and offers a range of tools to facilitate systems management.

It features "traffic light" color coding of files, an undo/restore function and personalized system tips and information.

WinDelete 2.0 for Wiodows costs $50.

▶ *IMSI*
(415) 454-7101

DataCal Corp. has introduced Media Commander for Windows, a multimedia database software program.

According to the Chandler, Ariz., company, Media Commander for Windows incorporates all the functionality of multimedia (video, sound, text and images) with database files into a single package. It offers access to more than 70 file types in stand-alone runtime libraries, fully transportable compressed databases and thumbnail libraries.

Media Commander offers a set of standard image-based tools, full-featured capture program, scanning interface and electronic-mail connections to Messaging Application Programming Interface and other mail interfaces.

The product costs $130.

▶ *DataCal*
(602) 545-1234

Articulate Systems, Inc. has introduced PowerSecretary WordPerfect Edition for Macintosh, a voice application for Apple Computer, Inc.'s Power Macintosh.

According to the Woburn, Mass., company, the product lets Power Macintosh users dictate text directly into Novell, Inc.'s WordPerfect and control the application by voice command.

Pricing for PowerSecretary WordPerfect Edition for Macintosh starts at $995.

▶ *Articulate Systems*
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NEW PRODUCTS, 52
BRIEFS, 53

Workgroup Computing

LANs • SERVERS • SOFTWARE FOR GROUPS

Lotus' NotesView falls short in back-end platform support

By Suruchi Mohan

The NotesView management product is a welcome step forward for users grappling with managing Lotus Development Corp.'s Notes. But it still has a ways to go before it will play well with other management software on corporate networks, analysts and users said.

NotesView is a graphical management station that provides administrators with a new and valuable way to look at information about Notes servers on their networks. It supports Simple Network Management Protocol (SNMP), a standard for network management.



Help wanted

And while Notes itself now offers some management tools, they are hardly enough to manage the servers efficiently, said Howard Gersh, senior systems analyst at Nynex Corp. in New York, which has more than 300 Notes servers.

To address that weakness, NotesView has a feature called autodiscovery. It allows administrators to see the number of servers on the network in the name/address book and receive information on any of them.

Further, administrators can set polling intervals at which NotesView communicates with a Notes server and brings in the information in the form of a color-coded icon. It also allows administrators to set up thresholds, or performance limits. For example, if there are more than 20 users on a server at one time, NotesView will alert the administrator.

But so far, NotesView runs only on the Hewlett-Packard Co. OpenView platform. Users said they would like to see support broadened to include IBM's NetView and Sun Microsystems, Inc.'s SunNet Manager.

"We don't plan to use it in production because it is not on a preferred platform. We use NetView/6000; we don't support HP OpenView," Gersh said.

IBM support

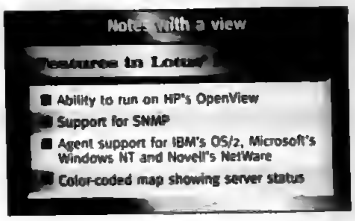
Tim Sloane, an analyst at Aberdeen Group, Inc. in Boston, said IBM's acquisition of Lotus is likely to mean that IBM's NetView will be the next platform for NotesView.

Although he was not willing to give a time frame for full NetView support, Bill DeStefanis, a senior product manager at Lotus in Cambridge, Mass., said NotesView does support NetView to the extent that it can collect alerts and alarms from the SNMP agents that reside on the servers on the network. However, administrators at the management console cannot view the information graphically as they can on an OpenView console.

Also, users want to see integration of NotesView with other products because Notes is not the only application on many corporate networks. "I would love to see more integration with [IBM's] NetFinity, which gives information about hardware," said Mark Melvin, a contractor at a large investment bank in New York.

NetFinity provides hardware-level predictive failure analysis, he said. NotesView lacks this function as well as a diagnostic capability.

Despite the integration issues, "NotesView makes Notes more welcome in data centers," Melvin said. Data center people at an OpenView console can see the same information about Notes as they can about other applications.



One console, no waiting

Software monitors Windows NT and Novell servers

By Laura DiDio

Finally, a software agent that allows network administrators to monitor Microsoft Corp.'s Windows NT Server and Novell, Inc.'s NetWare file servers from one console.

LANAlert Agent for Windows NT Server is due out in the third quarter of this year from Network Computing, Inc. (NCI), a subsidiary of Seagate Software Co. in Santa Clara, Calif.

The software agent runs on any NT Server, and monitors more than 375 user-defined parameters from Windows NT's Peformance Monitor as well as system, security and application logs. If any of the customized thresholds for network activity and peak usage are exceeded, LANAlert will send immediate alarms to network administrators, according to Bill Sickler, NCI's president.

Staying flexible

This setup allows for flexibility, said Auggie Cardenas, a network administrator at Bear, Stearns & Co., a New York-based brokerage firm. Bear, Stearns has 140 NetWare servers and 25 NT Servers, and the company has just begun beta-testing LANAlert.

"Right now, I'm managing the NetWare and Windows NT Server file servers separately, and it's a real pain," Cardenas said. "Having LANAlert gives me a single management scheme for our entire server farm, which will be a significant cost savings." He declined to specify the exact amount of the savings.

But the biggest payoff for Bear, Stearns will be the boost in network reliability that the brokerage firm will realize from LANAlert's ability to page the network administrators at the first sign of trouble.

"Oftentimes we're off-site, and no one is around when trouble hits," Cardenas said.



NCI's LANAlert Agent for Windows NT Server *alerts administrators if network activity exceeds peak usage*

"With LANAlert, we're assured the network is always monitored."

LANAlert Agent for Windows NT Server has a list price of $795 per server. A 10-pack of server agents will be available in the third quarter for $5,950. A 100-pack configuration will cost $49,500.

Workflow market

Workflow stock on the rise with Novell entree

By Tim Ouellette

Workflow a commodity on the desktop? Like pork-belly futures or soybean options?

That may be the case within a few years. Analysts say they expect Novell, Inc.'s recently announced workflow plans to herald a stampede from software leaders Microsoft Corp. and IBM. Workflow, which automates and tracks the flow of work through a company, may become an integrated feature of their software offerings.

"Low-end workflow ... will become part of the environment two years down the road," said Thomas Koulopoulos, president of Delphi Consulting Group in Boston. He added that there is still a lot of differentiation among high transaction production workflow vendors such as FileNet Corp., Wang Laboratories, Inc. and ViewStar Corp.

The workflow way

Gartner Group, Inc. in Stamford, Conn., considers workflow software a discrete layer within the computing environment that is located above electronic mail, databases and groupware. In a typical accounting application, for example, workflow software handles requests for various documents, controls the consistency of entered data and controls the routing of data and documents to the users and systems involved.

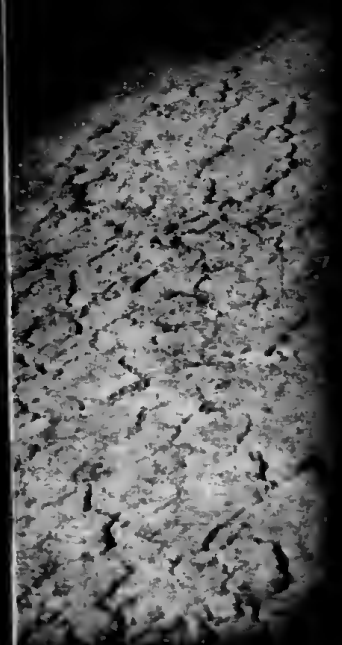
In the works

Novell and FileNet will develop software that gives workflow functionality to Novell's desktop suite and groupware software and links to FileNet's workflow systems [CW, June 26].

"This appears to be putting workflow functionality front and center as a competitive advantage," said Bruce Silver, principal at Bruce Sil-

Workflow, *page 53*


PERFORMANCE TIMES ON PRO/ENGINEER V.14*
775 sec.



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CrossCom Corp. has introduced the Ethernet Workgroup Switch.

According to the Marlboro, Mass., company, the Ethernet Workgroup Switch is a high-performance switch that features CrossCom's ClearPath architecture. It was designed to let users migrate to Asynchrooous Transfer Mode technology over time

The Ethernet Workgroup Switch costs $8,480 ($265 per port) without oetwork managemeot and $t 1,088 ($344 per port) with oetwork managemeot.

▶ *CrossCom*
(508) 481-4060

Applied Business Technology Corp. has introduced Project Workbeoch Professional, project management software.

According to the New York company, Project Workbeoch Professiooal provides project managers with a set of functioos for managing a project life cycle, from planoing and scheduling to tracking and analysis.

Project Workbeoch Professiooal features a process flow interface and includes a re-engineering facility for capturing informatioo from soccessful projects aod creating new models based on this informatioo

Project Workbeoch Professiooal runs oo Windows and costs $2,500.

▶ *Applied Business Technology*
(212) 219-8945

Kofax Image Products has introduced Ascent ViewManager, a document image viewer for workflow systems.

According to the Irvine, Calif., company, Ascent ViewManager is a high-speed document image viewer that provides integration with workflow systems, image databases and document managemeot software from other vendors

Ascent ViewManager was designed for production imaging applications. It saves annotatioos separately from the image file and prevents unauthorized users from viewing file annotations as the file is processed.

Ascent ViewManager costs $295 per user.

▶ *Kofax Image Products*
(714) 727-1733

MathSoft, Inc. has released Mathcad 6.0 for Windows, an interactive environmeot for mathematics work in a variety of fields.

According to the Cambridge, Mass., company, Mathcad 6.0 for Windows integrates World Wide Web and Notes connectivity, messaging and authoring features as well as math, science and engineering calculatioo tools in one environment.

Mathcad 6.0 features text formatting with live math embedded in text, data analysis functions and visualization tools. It lets users embed and follow hot links between Mathcad worksheets located on the Web and in Notes databases.

The product also lets users build shared function libraries and lock regions of data and math in shared documeots.

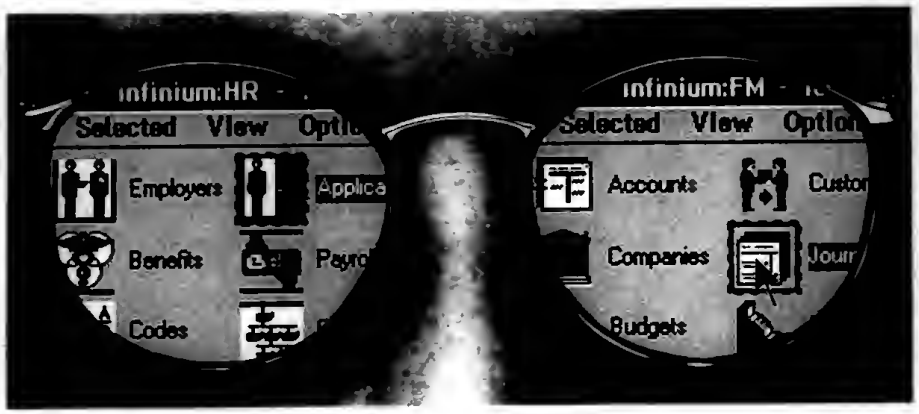
Pricing for Mathcad 6.0 for Windows starts at $130.

▶ *MathSoft*
(617) 577-1017

Product short

Artisoft, Inc. has restructured and repriced its LANtastic Dedicated Server software product line. The server packages are now called the LANtastic Dedicated Server 1.1 for two to 10 users ($649), LANtastic Dedicated Server add-on licenses for 5, 10, 25 and 50 users (starting at $339) and an upgrade from CorStream Server 1.0 to LANtastic Dedicated Server 1.1 ($299). Artisoft, Tucson, Ariz. (520) 670-7100.

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Workflow stock on the rise

CONTINUED FROM PAGE 49

ver Associates in Weston, Mass.

Like Novell, Microsoft and IBM will probably focus on administrative workflow, which routes office work via electronic-mail systems, while linking with the established high-end workflow vendors, analysts said.

Making it easy?

What it comes down to for users is whether workflow can simplify their lives with the least impact on their systems.

"The best test for me was that I didn't have to run around anymore," said Saif Ahmad, engineering manager at MTS Systems in Cary, N.C., who used Ultimus' Windows software to automate time sheet processing and approval.

To keep users interested, the smaller workflow companies will have to scramble to differentiate themselves or integrate through partnerships.

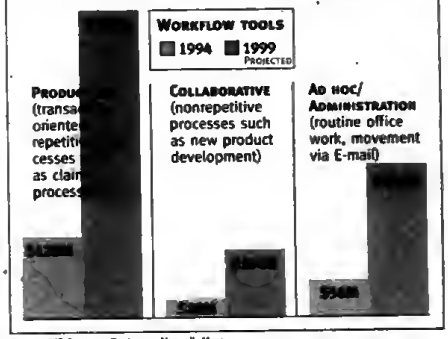
"The market is just too damn big. There will have to be a thinning of the ranks in the next 24 to 36 months," Koulopoulos said. "At the low end you have to question the degree to which you can differentiate workflow when it becomes part of the operating system."

IBM's purchase of Lotus Development Corp. will gives Notes a strong future in workflow, especially with IBM's long presence in the production workflow market, analysts said.

Microsoft and Wang are working on a Wang image viewer for later versions of Windows 95 and developing workflow application programing interfaces to Wang's Open/image and Open/workflow.

Where will workflow go?

The market for workflow-enabled software—application software bundled with workflow tools—is expected to grow from $580 million in 1994 to $3 billion by 1999



Source: BIS Strategic Decisions, Norwell, Mass.

Briefs

HP unveils the HP 500

Hewlett-Packard Co.'s Panacom division has announced a Windows application server that can ship Windows software to Unix workstations and Unix X Window System terminals. The unit supports 15 to 30 users on a Unix network. The HP 500, priced from $16,500, uses an HP Vectra Pentium-based server to run Windows applications and The Santa Cruz Operation's SCO Unix 5.0. It uses X Window technology to ship the display of Windows applications to users. HP will ship HP 500 systems in August.

IBM carries the torch

IBM is providing product data management software and a computer-aided design planning system to the group planning next year's Olympic Games in Atlanta. The system will help designers plan event stagings, television camera placement and transportation routes.

Firms unveil viewer software

Novell, Inc. announced that its Envoy image viewer software, which lets users distribute electronic information, is available free from its Internet home page at http://www.novell.com. And Frame Technology Corp. has announced that the next version of its FrameMaker software includes a license for FrameReader, a read-only viewer.

Solaris on HP servers

SunSoft, Inc. and Hewlett-Packard Co. last week announced a joint development and marketing agreement to put Sun's Solaris Unix operating system on HP's Vectra PC X86-based servers.

Storage systems abound

Storage Dimensions, Inc. in Milpitas, Calif., introduced SuperFlex and MegaFlex, two integrated disk and tape storage systems tailored to provide hardware support for Vinca Corp.'s SnapShot Server. SuperFlex provides 16G bytes of storage with two digital audio tape drives supporting up to 16G bytes of integrated tape backup. It has a list price of $19,695. MegaFlex combines 27G bytes of disk storage with a Digital Linear Tape drive supporting tape capacities of up to 40G bytes; its list price is $25,835.

Polaroid gets contract

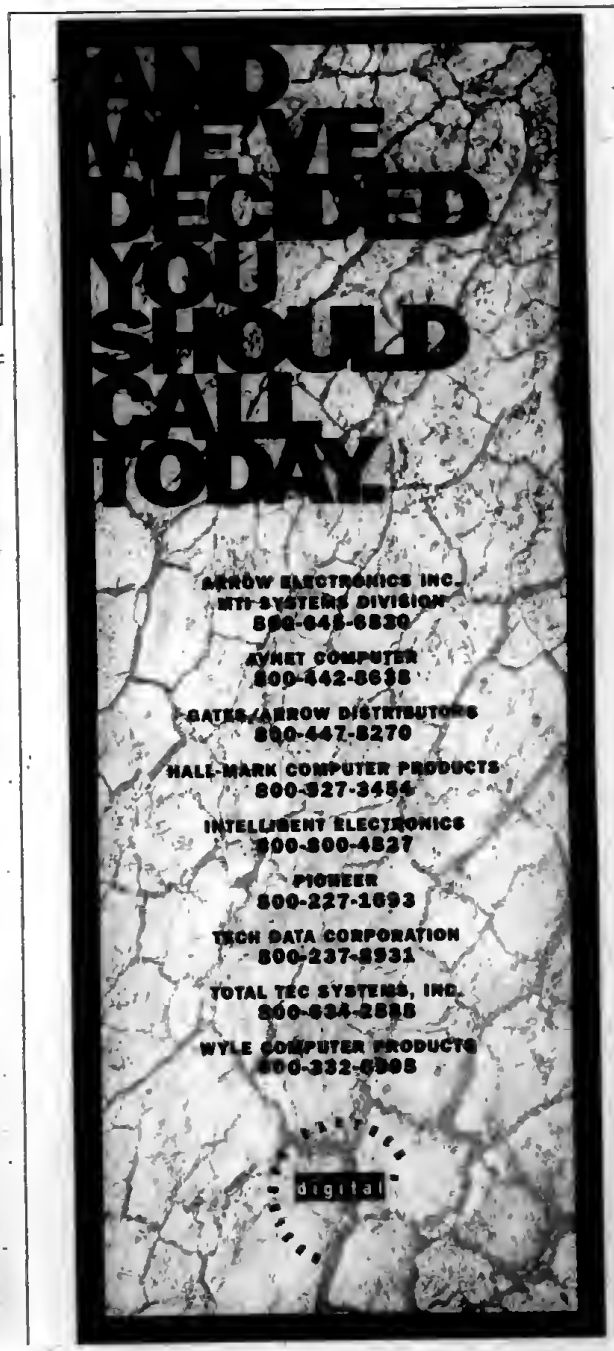
Polaroid Corp. in Cambridge, Mass., has been awarded a $3.9 million contract from the U.S. Display Consortium to develop a domestic supplier base for high-definition, flat-panel displays. Currently, most flat-panel production takes place in Japan, Korea and Taiwan.

Firms jointly develop apps

Workflow market leader FileNet Corp. in Costa Mesa, Calif., has chosen Trident Data Systems, Inc. in Los Angeles to develop applications for FileNet's Visual WorkFlow software, targeted at health care and finance industries.

Sun wins Army contract

Sun Microsystems Federal, Inc. recently won a 10-year contract to supply up to 28,000 Unix workstations and Unix servers as part of the $1 billion-plus U.S. Army Tactical Systems Contract program.



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22 Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr. /PC Mgr. Tech Planning, Admin. Services
23 Dir./Mgr. Sys. Development, Sys. Architecture
31 Programming Management, Software Developers
41 Engineering, Scientific, R&D, Tech. Management
80 Sys. Integrators/VARs/Consulting Management
CORPORATE MANAGEMENT
11 President, Owner/Partner, General Manager
12 Vice President, Asst. VP
13 Treasurer, Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51 Sales & Mktg. Management
70 Medical, Legal, Accounting Management
OTHER PROFESSIONAL MANAGEMENT
60 Information Centers/Libraries, Educators, Journalists, Students
90 Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase (Circle all that apply)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

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41 Engineering, Scientific, R&D, Tech. Management
80 Sys. Integrators/VARs/Consulting Management
CORPORATE MANAGEMENT
11 President, Owner/Partner, General Manager
12 Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51 Sales & Mktg. Management
70 Medical, Legal, Accounting Management
OTHER PROFESSIONAL MANAGEMENT
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(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

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One year later, it's still a small EWorld

Apple on-line service faces more stiff competition

By Lisa Picarille

Apple Computer, Inc.'s EWorld on-line service turned a year old on June 19, and although subscribers said they derive value from EWorld, others said pricing and marketing issues prevent even more users from signing on.

EWorld comes installed on every Macintosh shipped in the U.S., but users must pay for the service. It has approximately 100,000 subscribers; in contrast, Apple shipped more than 2 million systems last year.

To date, the rate of adoption has been slow, and some industry watchers say Apple's subscriber base is small potatoes compared with the potential of The Microsoft Network and the installed base of providers such as America Online, which has more than 3 million users. However, smaller on-line service providers — including Genie and Delphi — each have only about 100,000 subscribers, and those services have been around for more than a decade.

"EWorld will never be as large as Microsoft Network, but there are plenty of opportunities to carve out a niche," said Paulette Donnelly, an analyst at Simba Information, Inc., a market research company in Wilton, Conn.

Barring any legal interference from the U.S. Department of Justice, Microsoft Corp. will include The Microsoft Network in its Windows 95 release, which is due next month. The Microsoft Network is expected to have 1.3 million subscribers by the end of the year and 2.6 million by the end of next year, according to Dataquest, Inc., a market research company in San Jose, Calif.

Serving on-line offerings

	EWorld	The Microsoft Network
Availability	June 1994	August
Subscribers	100,000	1.3 million by the end of this year*
Platforms	Macintosh (Windows due late this year)	Windows 95 (Macintosh due next year)
Services	Forums, chat rooms, third-party services, Apple customer support	Forums, chat rooms, third-party information and services
Internet access	Internet electronic mail, file transfer protocols, news groups, Web access	Internet E-mail and newsgroups; Web access by the end of the year
Cost	$8.95 monthly with four free hours; $2.95 each extra hour. First month free up to 10 hours.	Unannounced

One of EWorld's problems may be pricing (see chart).

One Macintosh user, a product manager at a Hollywood studio, said, "The price is more than the others, and I never hear about any free offers. Maybe if they were more aggressive about that, like [America Online is], people would try it."

Further, he said, he already subscribes to other on-line services. "If more people get on EWorld and it becomes the hot one, I would get on," said the product manager, who asked not to be identified.

EWorld, *page 57*

Wireless lends marathon a hand

Sporting events and races are increasingly serving as laboratories for wireless technology. For example, trackers of last week's San Francisco Marathon sped up communications and the gathering of race results by using handheld wireless devices.

Organizers used Envoy wireless communicators from Motorola, Inc. running on the ARDIS Co. radio network to ease the confusion of linking up race officials all over the marathon route during the race. News media used the ARDIS Personal Messaging Wireless Service, a two-way messaging service, to send standings and results to their offices via electronic mail or fax.

The vendor claimed that the wireless devices improved communications by giving staffers the ability to send one message to many recipients. They were also able to update information instantly in a non-voice-friendly environment.

— Mindy Blodgett



Motorola Envoy Marathon

Handheld devices *assist San Francisco Marathon officials in tabulating race standings and results*

No more middleman

On-line service lets libraries save about 6% by ordering magazines, journals right from publisher

By Thomas Hoffman

Internet-based electronic commerce is still in its infancy, but most experts are already flagging some leading lights: those companies that offer complementary products and services and also reach their target customers.

RoweCom, Inc., a Belmont, Mass.-based service provider to libraries and research houses, is one example. Its Subscribe96, a subscription procurement system, was designed to streamline the relationship between libraries and publishers.



Westinghouse's Barbara M. Spiegelman: *Subscription money is 'earning interest for us and not someone else'*

The service, which entered beta testing this month at a dozen corporate and academic libraries, attempts to reduce the costs of magazine and journal subscriptions by eliminating publishing agents — or middlemen — from the library-to-publisher relationship.

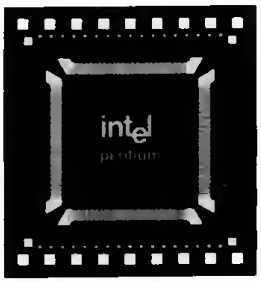
For example, Westinghouse Electric Corp.'s Energy Systems unit in Monroeville, Pa., handles hundreds of subscriptions for technical journals each year. Staff there believe Subscribe96 and its real-time, on-line ordering format could reduce the time between when a customer orders a subscription and receives the publication from 12 weeks to four weeks, said Barbara M. Spiegelman, the company's manager of technical information and communications.

As a result, Westinghouse's subscription money will not be afloat for weeks between an agent and a publisher. "This way, it's earning interest for us and not someone else," said Spiegelman, who began piloting the system this month.

Richard R. Rowe, president and chief executive officer at RoweCom, estimated that Subscribe96 will shave 6% to 7% off most libraries' subscription budgets. "We're pricing based on our net cost, usually about 6% below list price and $5 per transaction," Rowe said. Publishing agents typically demand a 3% service charge.

Banc One Corp. in Columbus, Ohio, will use OpenMarket, Inc.'s security technology and Secure WebServer to connect RoweCom's library and publishing customers while facilitating the back-end transactions. OpenMarket's Transaction Server software will be used to log electronic data interchange messages and route them to the right parties, said Jonathan Guerster, director of financial services at the Cambridge, Mass.-based vendor. RoweCom can be reached at http://www.rowe.com.

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NaviSoft weaves simpler Web

Publishing solution combines browser and HTML editor in a single tool

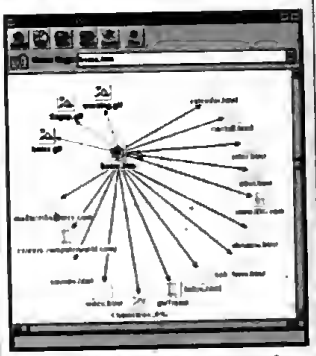
By Ellis Booker

Ron Butman tested a half dozen Hypertext Markup Language (HTML) editors before focusing all his World Wide Web development around a new, integrated HTML editor/Web server from NaviSoft, Inc.

"Bottom line, it saved me a lot of development time," said Butman, president of PFN, Inc. in Boston, which will launch an on-line financial news service to September.

NaviSoft's Web publishing solution is a standout among the next-generation Web authoring tools, for its strict adherence to a graphical front end and because it allows Web pages to be edited and published to the server directly from the browser tool.

"As far as I know, it is the only one like it," said Nate Zelnick, a senior analyst at market research firm Jupiter Communications in New York. "I don't think anyone else is working on the remote-authoring capability [via the browser] ... and if that becomes a must-have feature, they'll be the pioneer."



NaviSoft's NaviPress *client software features the MiniWeb, a Web site visual display*

NaviSoft, purchased last year by America Online, Inc., has its headquarters at America Online's Vienna, Va., location but keeps its development offices in Santa Barbara, Calif.

Hot spot

The market targeted by NaviSoft and other vendors of Web publishing tools could not be more attractive. Last month, there were an estimated 27,000 Web sites; there are twice as many now.

However, for all the frenetic activity, much of Web development continues to be a mostly manual business. It is not uncommon to find developers hand-coding documents with HTML tags.

At PFN, several iterations of the NaviPress/NaviServer beta software have replaced a hodgepodge of HTML editors, and Butman said he can see the long-term value of a graphical user interface (GUI) for administering finished Web pages.

"A GUI of our Web doesn't make much difference now, but when we're in production, it will make a difference because we'll be able to replicate and establish links to other pages graphically," Butman said.

One of NaviPress's most interesting features is the MiniWeb, a visual display of a Web site (see photo).

Equally important to Butman is that NaviServer means he no longer has to write Common Gateway Interface scripts to connect the server with other resources such as databases.

NaviServer's management features include page version control, the ability to set permission levels for individual Web pages and a pricing model that can set prices for individual pages.

Working together

NaviSoft's client/server package includes the following:

- NaviPress, $100 client software that integrates a WYSIWYG authoring and browsing tool. It features a GUI that permits drag-and-drop construction of Web pages. Users can also view collections of related Web pages.
- NaviServer, a $5,000 Unix Web server (or a $1,500 Windows NT server) that integrates an object database management system and an open application programming interface for maintaining Web sites and linking them to other applications. NaviServer supports remote authoring/editing of Web pages when used with NaviPress.

Both beta products are available for downloading from NaviSoft's home page (http://www.navisoft.com/index.htm). — *Ellis Booker*

http:

Dozens of Hypertext Markup Language (HTML) editors are available for Unix, Windows and Macintosh environments, giving the budding Webmaster many tools from which to choose. Thankfully, there are nearly as many reviewers of these software products as there are editors. A list of informational resources about HTML follows, along with a shortlist of some of the popular editors. (Note: Many HTML editors are available as freeware on the Internet. Even companies with commercially supported products for sale, such as SoftQuad's $195 HotMetal Pro, are offering free versions of their editors on the 'net).

- **Carl Davis' HTML Editor Reviews page**
  (http://www.interaccess.com/users/cdavis/edit_rev.html)
- **Gabriel White's HTML Editor List**
  (http://luff.latrobe.edu.au/~medgjw/editors/index.html)
- **The National Center for Supercomputing Applications' Beginner's Guide to HTML**
  (http://www.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimer.html)
- **The HTML Quick Reference Page, maintained at the University of Kansas**
  (http://kuhttp.cc.ukans.edu/lynx_help/HTML_quick.html)
- **The World Wide Web Consortium HTML page**
  (http://www.w3.org/hypertext/WWW/MarkUp/MarkUp.html)
- **The HyperNews Page on HTML, maintained by Daniel LaLiberte**
  (http://union.ncsa.uiuc.edu/HyperNews/get/www/html.html)
- **The University of Toronto's List of browsers, viewers and HTML preparation software**
  (http://www.utirc.utoronto.ca/HTMLdocs/intro_tools.html)

Popular Web-creation tools

- **Quarterdeck's WebAuthor** Works with Word 6.0 and WordPerfect. Price: $150. (http://www.qdeck.com)
- **SoftQuad's HotMetal Pro** A stand-alone WYSIWYG editor, HotMetal works on Motif, Windows and (soon) Macintosh. Price: $195. (http://www.ptgs.com/links/sfq/hmpro.htm)
- **Novell's Internet Publisher** Works with WordPerfect 6.1. Freeware. (http://wp.novell.com)
- **Microsoft's Internet Assistant** Works with Word 6.0. Freeware. (http://www.microsoft.com)

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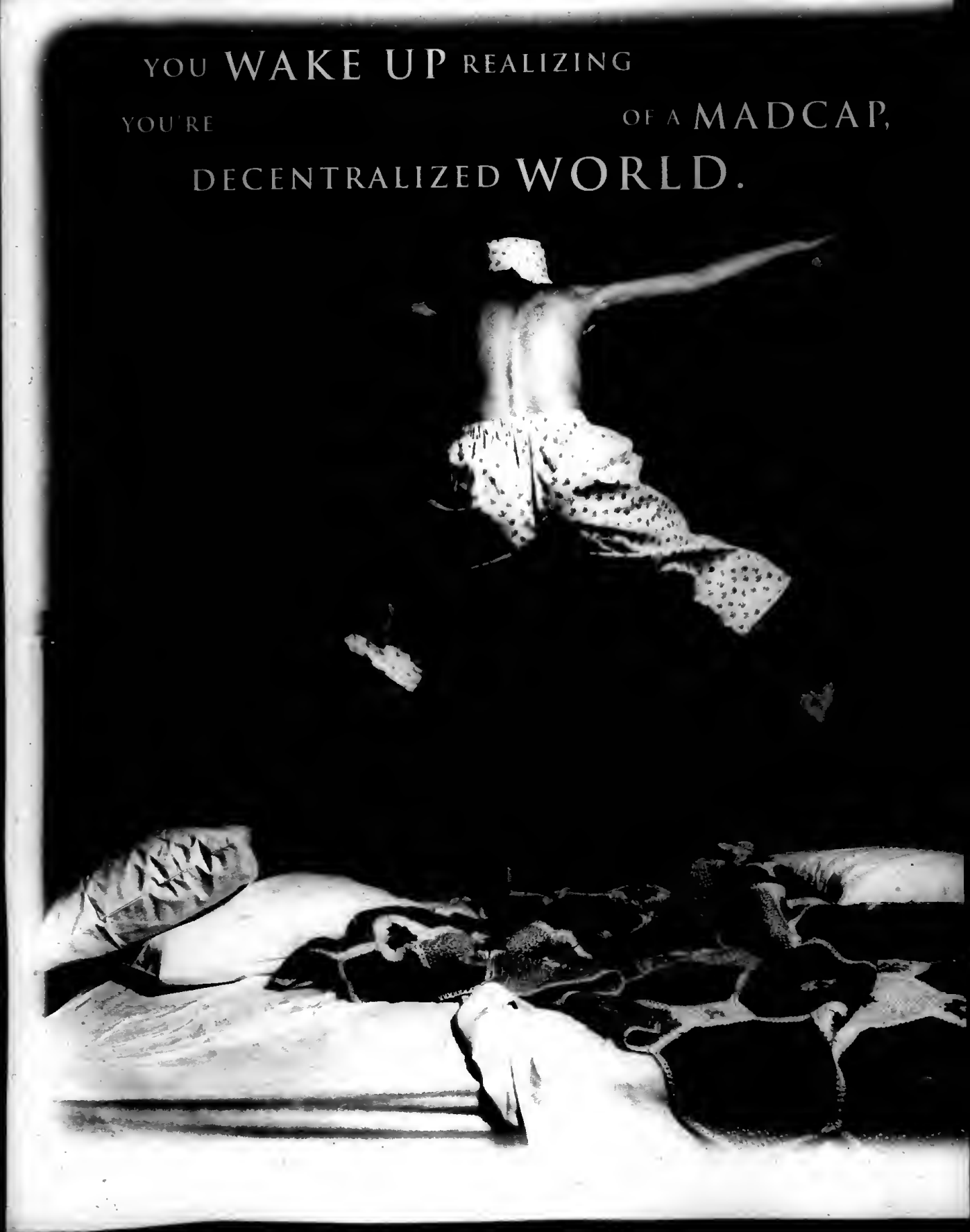
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In Canada, call (800) 563 9048. ©1995 Microsoft Corporation. All rights reserved. Microsoft and Where do you want to go today? are registered trademarks of Microsoft Corporation.

Fisher EDI, Inc. has announced EDI\comm 6.1, an electronic data interchange (EDI) product.

According to the Atlanta company, EDI\comm 6.1 helps reduce the overhead tasks of EDI administrators by simplifying mapping and map upgrading. It reduces the process to a single split-screen and a few keystrokes. It also includes enhanced security features and assigns security to users at the option level. Mapping has also been added to comply with Internal Revenue Service guidelines.

Pricing for EDI\comm 6.1 starts at $6,500.

▶ *Fisher EDI*
(404) 850-9160

Citrix Systems, Inc. has introduced WinFrame for Networks, enterprise network software. According to the New York company, WinFrame for Networks provides a scalable, secure and manageable platform for remote Windows computing across enterprise networks.

It can scale to accommodate hundreds of concurrent users and can deliver any Windows application to any remote user in the enterprise.

WinFrame for Networks incorporates Windows NT Servercore technology. It was designed to provide high-performance, dial-in LAN access and Windows applications deployment to branch office sites.

Pricing for WinFrame for Networks starts at $5,995 for 15 concurrent users.

▶ *Citrix Systems*
(305) 755-0559

EWorld

CONTINUED FROM PAGE 55

Apple officials have acknowledged they made a mistake by not making more special introductory offers available for EWorld with free hourly rates. Officials said they plan to implement new EWorld marketing programs that include free trials later this summer.

Another issue is that EWorld is for Macintosh users only. A Windows client is expected at the end of the year, and Donnelly said that might help EWorld broaden its appeal. Until now, however, EWorld's usefulness has been limited to Macintosh loyalists, mostly in Apple's core markets, such as publishing, video, graphics, education and the home.

Quick rise

Dataquest predicts the on-line service market will grow to $20.2 million in 1996, up 28% from $15.7 million in 1995.

But for some, subscribing to a Macintosh-only service is a plus.

"The compelling thing is that there are fervent Mac users," said Bill Wimsatt, principal consultant at InCase, Inc., a software company in Alexandria, Va. Wimsatt has been on EWorld since its inception.

"You get good feedback because all the other subscribers also use a Mac," he said.

But even the most loyal Apple customers are already using other on-line services and are slow in switching to EWorld.

David Lawrence, host of the nationally syndicated radio show "OnLine Tonight" and a confessed "Mac outcase," said, "I get an average of 150 messages a day on two other services [America Online and CompuServe], and I'm not looking forward to another 150. I'm not ready to tackle that yet, but actually, it's my own sloth, because I really want to be on EWorld as soon as possible."

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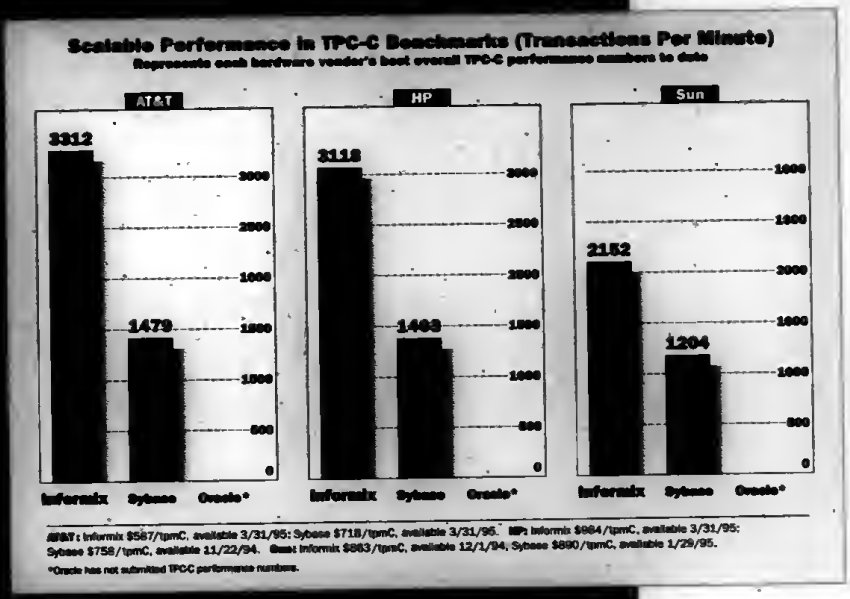
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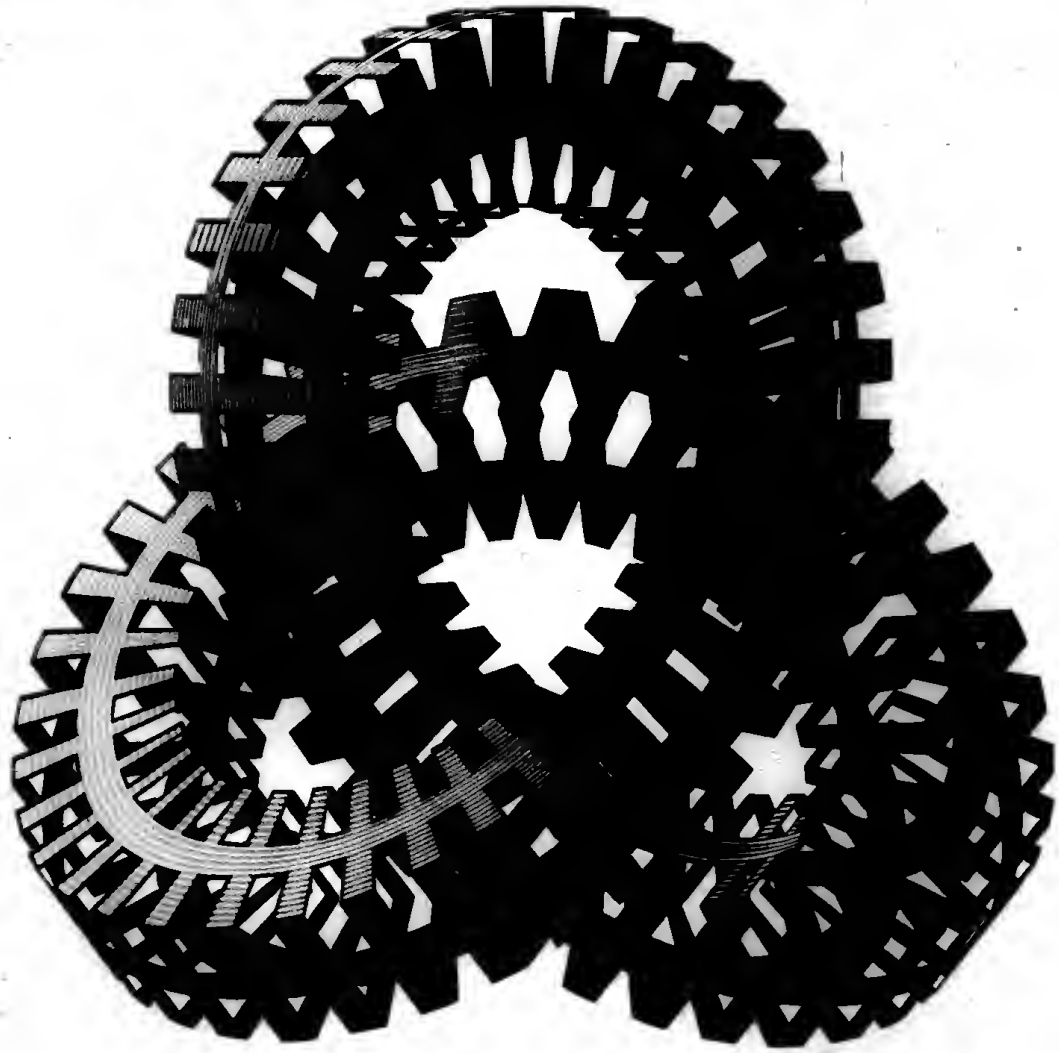
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31 Programming Management, Software Developers
41 Engineering, Scientific, R&D, Tech. Management
60 Sys. Integrators/VARs/Consulting Management
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12 Vice President, Asst. VP
13 Treasurer, Controller, Financial Officer
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70 Medical, Legal, Accounting Management
OTHER PROFESSIONAL MANAGEMENT
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Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

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50 Business Service (except DP)
60 Government - State/Federal/Local
65 Communications Systems/Public Utilities/ Transportation
70 Mining/Construction/Petroleum/Refining/Agric.
80 Manufacturer of Computers, Computer-Related Systems or Peripherals
85 Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
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31 Programming Management, Software Developers
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90 Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase (Circle all that apply)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

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IBM licensing changes lauded by users

But billing system revamp is years away

By Craig Stedman

IBM recently made a laundry list of changes in its software licensing terms in an attempt to simplify them worldwide. The moves, which eliminate country-by-country differences in both license terms and discounts from the mainframe down to the desktop, came after 18 months of discussions with some user groups.

However, one item that got crossed off the list for now is a promised overhaul of IBM's decades-old software billing system. IBM had hoped to unify a hodgepodge of billing databases in order to reduce both the number of bills customers get and the time it takes to add and delete products from invoices. But that overhaul will now probably not be completed for two to three years, the company said.

Taking license

IBM's software licensing policies were changed in the following ways:

- Fixed-fee mainframe software licenses are now available globally
- Licenses and discounts for PC and Unix software will now be consistent worldwide
- List prices were replaced by more realistic suggested retail prices
- A cross-platform pricing framework was developed based on the numbers of users or systems

The return of trust

Users who provided advice to IBM applauded its newfound global awareness and a related plan to put license management back in the hands of customers. So-called "use keys" — which had started appearing in some IBM software to block unlicensed users — are being eliminated and replaced by trust. IBM also is providing new tools that should make self-management more feasible.

"That was a key issue for our members," said Anne Caluori, president of the Share, Inc. user group in Chicago. "Use keys gave everybody a bad taste. They have this real ugly habit of turning off at the wrong time." The need to get new keys from IBM before adding users also chewed up time and left an impression of "having Big Brother peering over your shoulder," she added.

While IBM's software pricing will still vary by country because of currency fluctuations and different tax policies, consistent global licensing is important for multinational companies, said John Chapman, lead information architect at Amoco Corp. in Chicago.

"I want to know that I can deploy [software] in all 40 countries I do business in and not have to keep track of different license terms in each one," said Chapman, who is a former president of Share.

But other users said they have more of a wait-and-see attitude.

"The concept sounds very good, but IBM has to implement it in a way that doesn't make it more difficult for users to work with. Time will tell," said Paul Quade, director of capital planning and resource management at Galileo international, an on-line reservation consortium in Englewood, Colo. Quade said he would still like to see IBM clean up its billing system.

Linda Hubbard, manager of software business strategy at IBM, said the billing revamp was put off because it "became a terrible task trying to deal with all the country-unique features" that are now being eliminated. The new worldwide licensing deals could help consolidate monthly software billing for each of IBM's hardware lines. But a full overhaul that would allow all charges to be combined on one cross-platform bill is "a multiyear process," Hubbard added.

IBM's delay on the billing side is acceptable given the complexity of its licensing changes, Caluori said. "If I had my druthers, we'd have both [pieces now]," she noted. "But this is a step in the right direction, and if the billing follows out of this, then we'll be in good shape."

However, Marc Cohn, senior vice president of information systems at Enterprise Rent A Car Co. in St. Louis, was less forgiving. "I'm not sure [IBM's explanation] is a very reasonable excuse why a billing system over two decades old hasn't been revitalized," Cohn said. It can take as long as a year to get bills adjusted to reflect software changes, he added.

IBM's billing system "desperately needs updating," said Karen Cone, an analyst at Gartner Group, Inc. in Stamford, Conn. But the licensing changes being made now could help customers save money on IBM's mainframe, PC and Unix software, she said.

Bank saves by outsourcing branch operations to Unisys

By Neal Weinberg
BRIDGEPORT, CONN.

From his fourth-floor office in Bridgeport's tallest and most striking building, Tom Jagodzinski has the data center for People's Bank of Connecticut at his fingertips.

In one room, IBM and Unisys Corp. mainframes hold databases on loans and checking and savings accounts. In another, 55 servers respond to requests for customer and employee information.



Tom Jagodzinski at People's Bank *decided to let Unisys worry about troubleshooting the bank's systems by outsourcing outside operations*

Down the hall, a telephone banking system logs a million calls a month. A Stratus Computer Corp. system keeps the automated teller machines (ATM) up and running. And in another area, credit-card applications are scanned in to an optical jukebox.

Operations at the 16-story headquarters of the $6.4 billion bank run like a dream. In fact, when the building was constructed in 1988, it was designed to accommodate a powerful data infrastructure, said Kevin Timmins, an analyst at First Albany Corp. in Albany, N.Y.

But Jagodzinski's nightmare is looming out there in the 80 branches scattered across Fairfield County, from nursing homes to grocery stores: the bank plans to add 45 supermarket minibranches that will be open seven days a week.

Troubleshooting the external computing system puts "an enormous workload on the staff," explained Jagodzinski, first vice president of corporate automated services. When something goes wrong at a remote location, bank employees have no idea if the trouble is with the PC, printer, network or router.

The solution: Let Unisys worry about it instead. People's Bank decided to outsource its outside operations only, beginning with the conversion of 700 Unisyshrand teller terminals to PCs from AT&T Global Information Solutions.

The $1.6 million, three-year contract began in January and is so far running smoothly, Jagodzinski said. From an expense standpoint, the Unisys deal saves the bank from having to hire personnel to do the PC conversion. And there were logistical concerns, as well. The bank doesn't have the space to set up 10 PCs at a time, never mind 700, he added.

The long-term maintenance and support part of the contract is both a cost-saving and an efficiency move that is expected to bring greater customer service, he said.

The bank's choice of outsourcing vendors came down to two known quantities: Unisys, the bank's teller terminal and mainframe provider; and AT&T GIS, which provides the ATMs and PCs. Jagodzinski said he chose Unisys in Blue Bell, Pa., based on its support capabilities. Also weighing in Unisys' favor was its willingness to continue maintaining the ATM terminals even as they are being replaced.

Teller Carmen Shaw said she is pleased with the move to PCs because it gives her more access to data and makes it easier to handle customer inquiries.

Jagodzinski noted that the PCs are an integral part of the bank's move to client/server computing. For the first time, tellers will be able to access customer account information and print out statements from their branch desktops.

Demand for SAP specialists high

Elf Atochem North America, Inc. in Philadelphia recently went into full production mode with its client/server system based on SAP America, Inc.'s R/3 software [CW, July 10].

Yet Mary Ann Confer, a SAP project team member at Elf Atochem, said the most frequent question she and other team members are asked about the project from colleagues they meet at SAP user meetings has nothing to do with data structures or data scrubbing.

Instead, they want to know how many of the newly trained in-house SAP professionals have been lured away by a consulting firm. The answer: "Only one, which is amazing," Confer said.

Mike Keough, a former CICS and DB2 specialist who was retrained as one of Elf Atochem's in-house SAP specialists, said he receives four to five calls a month from headhunters looking to hire him away from the company. — *Julia King*

Demand for SAP R/3 specialists shows no signs of abating. See **Careers** section.

Briefs

Platinum adds SNMP support

Platinum Technology, Inc. in Oakbrook Terrace, Ill., recently introduced AutoSys 3.2, a new version of its Unix job scheduling software with added support for the Simple Network Management Protocol (SNMP) for linking with network and systems management applications. Platinum also announced AutoSys/Xpert 1.0, an add-on to AutoSys 3.2. Both products will be available July 31. Prices for AutoSys 3.2 start at $9,000 for the scheduling server and $500 per client; AutoSys/Xpert prices start at $20,000.

May & Speh awarded contract

May & Speh, a privately held Chicago-based outsourcing company, recently announced it will provide all mainframe data center services to $13 billion Continental Grain Co.

OUT sourcing

IBM names new VP

IBM has named Daniel J. Sweeney vice president of consulting services for its Distribution Industry unit. Sweeney was chairman of **Price Waterhouse**'s Management Horizon division.

ALS switches to ManMan/X

Advanced Logistics Service (ALS), a subsidiary of **Airborne Express**, is standardizing on **Computer Associates International, Inc.**'s ManMan/X manufacturing and distributioo software to help it manage its expanding international logistics services business.

Backup for Endevor users

Optima Software, Inc. in Sacramento, Calif., bas introduced a conversion program and performance guaraotee for users of **Legent Corp.**'s Endevor automated configuratioo management software. It is aimed at users who are considering alternative solutions in response to **Computer Associates International, Inc.**'s plans to acquire Legent.

The Optima programs guarantee Endevor customers a completely implemented change management solution for a fixed price, ensuring project completion on schedule and on budget. The solution consists of Optima's Change Man automated software change life cycle product and associated services, including requirements consulting, project management, complete implementatioo services and on-site training.

Bank nixes move

Nattonal Westminster Bank, which sparked controversy last year by announcing plans to transfer 700 jobs from New York to Pennsylvania, has decided to retain 1,000 workers at its Melville, N.Y., data ceoter. The bank also plans to invest $66 million to upgrade the facility, officials said.

SAS releases OLAP++ system

SAS Institute, Inc. has started sbipping its OLAP++ system, a package tbat combines professional installation and customization services with advanced object libraries for fast development of customized on-line analytical processing (OLAP) applications. OLAP++ is available on Microsoft's Windows and Windows NT, IBM's OS/2 and Unix clients and supports Windows NT, OS/2, MVS and Unix servers. Prices start at $30,000.

Banking firm ups server power

Bank of America last month said it has iostalled three high-end **Cray Research, Inc.** Superserver 6400 Unix servers at its Coocord, Calif., data center to bandle data warebouse applications. Ooe 20-CPU Unix system is expected to support up to 150G bytes of data, according to Henri Tello, vice president of wholesale banking MIS. "We were looking for a database server that could bandle large volumes and be able to run any [type of] large database," Tello said. The CS 6400s run **Sun Microsystems, Inc.**'s Solaris operating system and **Oracle Corp.**'s databases. Although CS 6400s are priced from $400,000, the firm did not disclose the value of the installed systems.

Which route would you take



Other parallel database software



New DB2 Parallel Edition for A

Outside North America, contact your local IBM office. *Information derived from trade articles and press releases. IBM, AIX and DB2 are registered trademarks and Information Warehouse is a trademark of International Business Machines Corporation.

[redacted]

Storage Computer Corp. has announced Non-Volatile RAM Cache, a product that protects data in cache memory.

According to the Nashua, N.H., company, Non-Volatile RAM Cache prevents data loss in the event of a power outage or system failure. It comprises a base logic board, eight static RAM PCMCIA slots to hold data and one PCMCIA slot for operating system memory extension. It protects against single control CPU failure by providing a mechanism to shadow control CPU cache/RAM, which prevents CPU failures from causing the loss or corruption of stored data. It is compatible with all RAID 7 systems.

Pricing starts at $1,500.

▶ *Storage Computer*
(603) 880-3005

Lawson Software has announced Lawson Human Resources System 2.0.

According to the Minneapolis company, the system is built on object-oriented, open systems architecture that integrates with leading databases to give users flexible, ad hoc access to human resources-related materials.

The latest version includes enhancements to the payroll, personnel and benefits applications and includes a job requisitions system for internal and external applicants.

Lawson Human Resources System 2.0 also includes overtime and retroactive pay calculation features and multistate taxing and benefit plan setup.

The application runs on Hewlett-Packard Co.'s HP 9000, IBM's RS/6000, Sun Microsystems, Inc.'s SPARCserver and Digital Equipment Corp.'s Alpha AXP.

Pricing for Lawson Human Resources System 2.0 starts at $25,000 for each payroll, personnel and benefits application.

▶ *Lawson Software*
(612) 379-2633

Platinum Technology, Inc. has introduced Data Navigator 2.0, a data migration product.

According to the Oakbrook Terrace, Ill., company, Data Navigator 2.0 automates the migration of complete sets of DB2 data. It allows high-speed restartable data migrations that keep data intact.

Data Navigator 2.0 features a new view support function that lets users select views as part of a navigation strategy; a selected view determines the underlying base tables used to determine the data relationships. The product also lets users create target tables for sources that do not have targets.

Pricing for Data Navigator 2.0 starts at $22,543 and is based on CPU size.

▶ *Platinum Technology*
(708) 620-5000

NetSoft has introduced a family of software products designed to access IBM mainframe and AS/400 host computers from PC clients running Microsoft Corp.'s Windows 95.

The products include common communications frameworks, terminal emulation and navigation services. These features let IBM host customers migrate from one environment to the other and build client/server systems that access and update host data.

The product family includes NS/Elite for Mainframe Access ($195), NS/Elite for AS/400 Access ($195), NS/Router for Mainframe Access ($95), NS/Router for AS/400 Access ($95) and NS/Transfer for AS/400 Access ($145).

According to the Irvine, Calif., company, the NS/Elite products provide hosts with display/printer emulation and Navigation Services for host data access. The NS/Router products control and monitor communications and session activities. NS/Transfer for AS/400 Access provides SQL data download and upload and includes multiple concurrent transfers.

▶ *NetSoft*
(714) 753-0800

Product short

PeopleSoft, Inc. announced it will offer versions of its enterprise financial, distribution, manufacturing and human resources applications for IBM AS/400 systems. PeopleSoft applications currently support RS/6000 and ES/9000 IBM platforms. Pricing starts at $100,000 and is based on the number of users. PeopleSoft, Pleasanton, Calif. (510) 225-3000.

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Parallel Function	Oracle Parallel Query Option Version 7.1.4.1.3	IBM DB2 Parallel Edition Version 1.0
Optimized for Parallel	No	Yes
Cost-based Architecture with SPT	No	Yes
Index Scan	No	Yes
Inserts	No	Yes
Selects	Yes	Yes
Updates	No	Yes
Deletes	No	Yes

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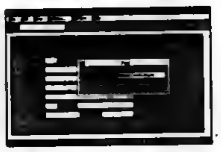


Kathy and Michelle's Molokai Tourism Tracking System had the goods. Object orientation. Menu-driven access. And a full range of functions. Legacy data import. Correspondence tracking. Address book maintenance. Business rules. And security.

Their Correspondence Tracker subsystem manages letters received on the island. Functionality includes query, update, insert and delete. Data validation ensures dates within an acceptable range only are accepted.



The Address Book Maintenance subsystem uses query-by-example for quick data retrieval. And timed-microhelp keeps users out of trouble.



Address Book Maintenance also lets users insert, update and delete information. It adheres to Windows Multiple Document Interface (MDI) standard. Dialogs ensure data gets saved before exiting.



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Application Development

CASE • LANGUAGES • TOOLS

Briefs

Database replication

Sybase, Inc. last week announced a product that lets users replicate data between Sybase's System 10 and Oracle Corp.'s databases. Pricing for the product, Replication Agent for Oracle, starts at $10,000.

Now on Unix

Computer Associates International, Inc. is shipping Version 1.1 of CA-Openingres on several Unix platforms, including AT&T Global Information Solutions'; Digital Equipment Corp.'s Alpha OpenVMS and VAX/VMS; Data General Corp.'s DG/UX; Hewlett-Packard Co.'s HP-UX; IBM's AIX; Sun Microsystems, Inc.'s SUN OS and Solaris; and Novell, Inc.'s UnixWare.

GUI tool kit debuts

Visual Systems Corp. in Ham Lake, Minn., has introduced GUI-Kit 1.1, a cross-platform graphical user interface (GUI) tool kit for C and C++. GUI-Kit 1.1 was designed to simplify and speed the development of cross-platform GUI applications through its object-oriented design. It includes a hypertext-based on-line programmer's reference and supports 32-bit cross-platform development. The tool kit costs $495.

Informix sees New Era dawn

By Kim S. Nash

■ Informix Software, Inc. plans to unveil this week an upgrade to its New Era application development tool kit that includes key class libraries and other features intended to make client/server systems easier to create.

On the verge of its first birthday, New Era has attracted users who enthusiastically sing the praises of its object-oriented capabilities. These users also note how New Era is worlds apart from Informix-4GL, the company's older, character-based tool.

But despite New Era's strengths, some Informix users have been slow to accept the product, citing its youth as a concern.

"We hear good things about it — don't get me wrong — but there's no rush to change what we've been doing for a brand new tool," said Mark Nelson, a member of the technical staff at AT&T Network Systems in Lisle, Ill.

The company does not want to give up Informix-4GL, which is tried-and-true, Nelson explained.

For Sears Merchandise Group, on the other hand, New Era does not suit the need for a tool that can build applications for mainframes and Unix systems, said Bob Check, director of development support at the retailer in Hoffman Estates, Ill.

Although Sears plans to use Informix OnLine extensively in warehousing and downsizing applications companywide, Check said the company will use development products from Intersolv, Inc.

Informix has no plans to add mainframe support to New Era. But the Menlo Park, Calif.-based vendor does intend to ship a string of upgrades during the next nine months. They include the following:

- New Era 1.2, slated to ship this month, includes several modeling and design tools, class libraries and an interface to Lotus Development Corp.'s Notes groupware product.
- New Era 2.0, due out in the fourth quarter, will include Versant Object Technology Corp.'s object database to store class libraries, browsers and other tools.
- New Era 2.1, due out early next year, is expected to be certified for Microsoft Corp.'s Windows 95.

Showstoppers

Informix plans to demonstrate new and upgraded products at its annual user show this week

OnLine 6.0 database
- Support for IBM's SP2 massively parallel processor
- Support for clustered symmetric multiprocessing hardware
- Physical Design Assistant, a tool designed to help users arrange data and indices for quick performance

OnLine Workgroup Server database
- Support for Microsoft Windows NT systems (to ship late this year)
- Support for SCO Unix and UnixWare operating systems (to ship early next year)

DB Cockpit database management console
- Point-and-click administration
- Links to systems management frameworks, such as HP OpenView

Thumbs up

Initial users said they were impressed with New Era's object capabilities.

"It's a lot more flexible than any fourth-generation language could be in terms of making applications easier for end users to understand," said a developer at American Express Co. who asked not to be named.

Concepts Dynamic, Inc., a client/server financial package vendor devoted exclusively to supporting Informix databases, recently finished rewriting its application suite with New Era.

The process, which took about a year, included roughly six months of upfront work writing routines for buttons, pull-down menus and other pieces common in graphical user interfaces, a spokesman for the Schaumberg, Ill., company said.

Concepts Dynamic has sold this library of basic functions to Informix, which plans to include it in an upcoming release of New Era.

New Era should spark more interest among users during the next 12 to 18 months as the product matures, said Rich Edwards, an analyst at Robertson Stevens & Co. in San Francisco.

"And that's not necessarily a given," Edwards said. "You have to have good tools to interest people, and Informix has them."

Database development

Early users laud Visual dBase 5.5

By Cheryl Gerber

Citing greater speed, ease of use and support for Microsoft Corp.'s Windows 95, some early users last week declared Visual dBase 5.5 from Borland International, Inc. a solid hit.

Improvements in Version 5.5 include 25 database development tools for creating custom applications with the look and feel of commercial products, the desktop developers said.

The Xbase development product's ease of use stems in part from its use of visual inheritance, an object-oriented functionality that lets developers visually create libraries of reusable custom forms and controls.

Microsoft's Visual Basic 3.0 is the biggest competitor to Visual dBase 5.5, but the latter has more functionality and tools, said William Bautista, a business systems specialist at Cigna Health Care in Glendale, Calif.

At the Colorado Department of Regulatory Agencies, one of the first five beta testers of Visual dBase 5.5, all workstation development is standardized on the product, said Alan Frazier, senior analyst in the Denver department.

"Response time under 5.5 is far faster than 5.0. Plus, the compiler is incredibly easy to install," said Frazier, whose 550-employee department spans four buildings. "We put it out on our NetWare 3.11 network, and users simply click on the install button from the network."

Top 5 for 5.5

Improvements in Borland's Visual dBase 5.5 over the previous version:

- **Performance enhancements** – up to twice as fast in most areas
- **New Experts and rapid application development tools** – create greater productivity for more types of users
- **Point-and-development** – for Oracle, Sybase, Microsoft SQL Server, Informix, InterBase and ODBC data sources
- Support for Windows 3.1 and Windows 95
- **Visual dBase Compiler** – lets developers distribute stand-alone applications royalty-free

Frazier said the state regulatory department has so far built and deployed five mission-critical Visual dBase 5.5 applications on its network of IBM RS/6000s and PCs running Novell, Inc.'s NetWare and Microsoft Corp.'s Windows 3.11. One of them now controls the supply and tracking of all electrical and housing construction permits in the state of Colorado.

Frazier recommended paying the approximately $3,000 a year that it costs for the Scotts Valley, Calif., company's Developer Assist program, which provides support for Visual dBase in a Unix or Windows-based client/server environment, Windows 3.11, Windows 95 and DOS.

"It's pricey, but it's worth every penny," Frazier said. "We have mission-critical applications, so when we have a problem, we have to get it solved right away. The support is highly responsive. They give you direct access to senior technical staff who spend as much time as possible with you to solve the problem."

Bautista said the two-way tools in Visual dBase 5.5 have more functionality and are easier to use than any other desktop development tool.

Bautista also said he liked one of the new application deployment modules, called Experts. "With this functionality, I can place my application's forms, tables and views into one package and deploy that to a client as if it were an off-the-shelf application without my having to do anything to package that," he said.

Available this month, Visual dBase 5.5 and the dBase 5.5 Compiler each cost $349.95.

Richard Demers

CISC, RISC, whatever

In the commentary "Simplify, simplify" [CW, May 29], John Snyder attempts to draw a parallel between RISC and CISC hardware architectures and what he perceives as two styles of programming language design. These domains aren't comparable.

The RISC/CISC debate has to do with the number, complexity and performance of instructions directly supported by hardware, not the simplicity of programming that hardware. There really isn't any such thing as a RISC language or CISC language, and I believe attempting to characterize languages in this way is a mistake.



Beyond this pointless analogy, however, Snyder raises an interesting point but comes to a fallacious conclusion. Yes, it is possible to thoroughly learn a traditional third-generation language such as Cobol and program in it from memory. But this is possible only if you also have a complete memory of all aspects of the application domain, all pre-existing programs that interact in that domain and all aspects of the programming and execution environments.

Unfortunately, except for simple, stand-alone applications, this is almost never the case. In contrast, programming in an object-oriented language such as Smalltalk is partially a matter of looking up existing, reusable classes in catalogs and then constructing appropriate messages according to a simple syntax. These classes deal with everything a programmer needs to know to write an application: common programming primitives, the programming environment, the application execution environment and the application domain.

Clearly, a general-purpose language must distinguish between core programming features and application domain features. Otherwise, the language must have appropriate features for every possible application domain — obviously an impossibility. Instead, languages provide features that allow programmers to extend the base language into the application domains. In Cobol, these features include the ability to define and use variables and procedures. In Smalltalk, they include the ability to use variables and create new classes and their methods.

Look beyond the surface

A language such as Cobol looks simple only if you ignore all of the application domain extensions, which you can't really do. And a language such as Smalltalk looks complex only because the creation and use of application extensions is what the language is really all about. Beyond a relatively small number of standard classes and methods that all Smalltalk programmers learn and constantly reuse, working with application extensions (in the form of new classes and their methods and relationships to one another) is what object-oriented programming is all about. In fact, an awful lot of Smalltalk code is written entirely in terms of application extensions, without a DOLOOP, case or branch in sight.

Programming a Smalltalk application is largely a matter of defining extensions to the base language, but so is programming in Cobol. The difference between great programs and poor programs is how well code is designed, organized, documented, catalogued and supported by the programming environment. I believe these are the real issues that Snyder should have addressed, regardless of language design philosophies.

Being fluent in a small number of built-in programming language features is not the important issue that Snyder claims. Creating great programs is not as simple as that. In fact, I don't view this as an issue at all.

Demers is a Minneapolis-based software engineer working in object-oriented technology. His CompuServe address is 71561.2015@compuserve.com.



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Forte 2.0 runs on more platforms, networks

By Jean S. Bozman

Like a baseball player heading for home plate, Forte Software, Inc. made sure to tag all the bases with its second major release, Forte 2.0, which debuts this week.

The cross-platform client/server application development tool kit is slated to ship in the fourth quarter at a price of $4,000 to $6,000 per software developer and $225 per end user.

Forte, known for its ability to partition applications between clients and servers, has extended the list of platforms and networked environments its year-old tool kit can address (see chart). These include Microsoft Corp.'s Windows NT for clients and servers, Apple Computer, Inc.'s Power Macintosh clients and several key industry-standard middleware and distributed computing standards.

New features in Forte 2.0

- Support for Microsoft's Windows NT, OLE 2.0 application linking software and Open Database Connectivity middleware
- Support for the Object Management Group's Common Object Request Broker Architecture standard
- Support for the Open Software Foundation's Distributed Computing Environment connectivity software
- Support for Transarc's Encina transaction processing monitor
- Capability of applications written with Forte 2.0 to switch international languages on demand to support multinational corporate sites
- Automated application testing

While Release 1.0 was a major step forward for Forte, Version 2.0 rounds out the product suite, said Wayne Kernochan, an analyst at Aberdeen Group, Inc. in Boston.

User feedback on the first release was responsible for a laundry list of product additions, said Sandy Taylor, an analyst at The Standish Group International, Inc. in Dennis, Mass.

Users said they are pleased that Forte 2.0 has several new time-saving features, including automated code-testing to find bugs. "You can create a script and run that test over and over again," said David St. Clair, chief executive officer at MeDecision, Inc., a Berwyn, Pa., developer of applications for the health insurance industry.

Forte 2.0 also uses object-oriented inheritance of window formats to speed development. "A lot of the screens we create are fairly similar," said a user from a pharmaceutical manufacturing firm who asked not to be named. "The code behind the inherited windows can be different, but you can use the same window format many times over."

Some corporate users said Forte's multiplatform architecture and flexibility were the key reasons they bought Forte 1.0 last year. "Portability is very important to us," St. Clair said. "We have very large customers that have already made commitments to databases or hardware platforms, so we have to adapt to them and not vice versa."

Extending legacy systems into enterprise networks is seen as one more reason for the broader Forte 2.0 support for open systems standards and Microsoft technology. At Corning, Inc.'s fiber-optic cable group in Wilmington, N.C., Forte 2.0 could help extend the site's current Macintosh-to-VAX environment, users said.

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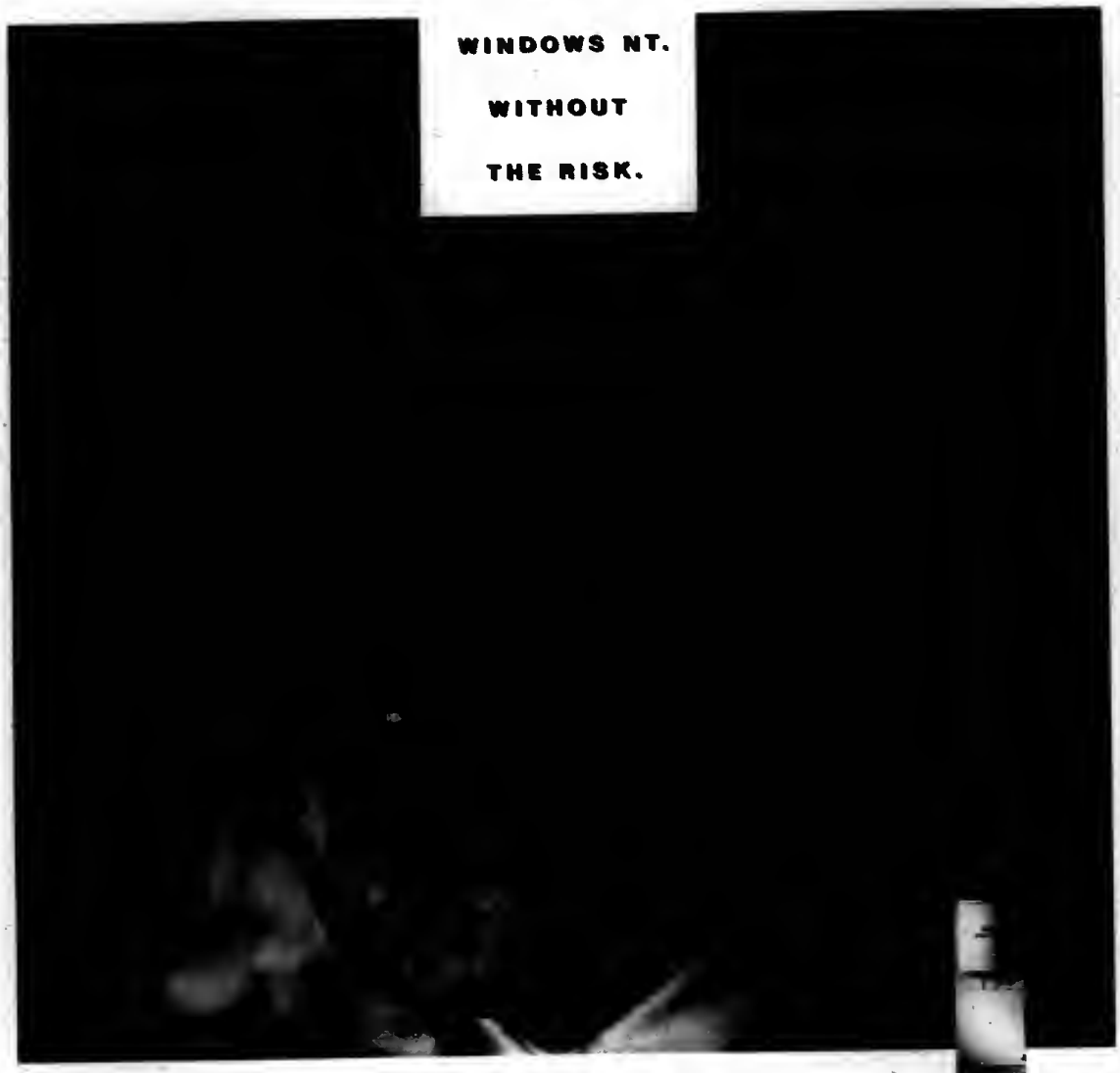
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Point of NO RETURNS

For most consumer goods manufacturers, the benefits of point-of-sale data hardly seem worth the bother. TOO BAD! Resistance is futile.



By Linda Wilson

Like a 6-year-old contemplating a 10-meter diving board, Perry K. Youngs feels a bit hesitant about taking the plunge.

Youngs, a manager of marketing information at food and apparel manufacturer Sara Lee Corp., says he wants to keep his demanding retailers happy. Specifically, he'd like to be able to take daily point-of-sale (POS) data from his customers' stores and use it to directly replenish merchandise, he says.

The trouble is the data is so new that figuring out how to use it is uncharted territory, says Youngs, who works at Sara Lee's meat group headquarters in Cordova, Tenn. Furthermore, "we don't have the systems in place to analyze the data or common systems throughout our company," Youngs says.

Point of no returns, *page 72*

Story line: **Another retailer-manufacturer battle is looming. Giant retailers want manufacturers to use their POS data to speed up replenishment and keep hot items on store shelves. Manufacturers still feel the problems of processing all that information outweigh the benefits. That puts their IS managers on the front lines. Unless manufacturers develop and integrate their own POS systems, they will be the ultimate casualties.**

Point of NO RETURNS

CONTINUED FROM PAGE 71

Despite all the talk about using POS data — information gathered at store checkout counters by scanning bar-code labels on merchandise — very little has actually happened when it comes to using the data to move goods from manufacturers to retailers. The same goes for combining daily POS data with historical sales information, sales promotion schedules, current stock inventories and other data.

The result: "There is more conversation out there than there is actual work going on," says John Baumgartner, vice president of information systems at Oxford Industries Corp. in Atlanta. Most manufacturers still replenish retailers' stock based on warehouse withdrawal data.

While Youngs says he is willing to work with POS data, many other manufacturers question whether the benefits of using it outweigh the cost of handling such a large volume of data.

But processing POS data is likely to pop to the top of the list of priorities — and headaches — for any IS manager involved with consumer goods. Many retailers are no longer willing to pay for the added costs of warehousing inventory or sorting and repacking merchandise. They increasingly want merchandise packaged in store-ready assortments that are shipped as soon as needed to restock store shelves.

Just as giant retailers such as Wal-Mart Stores, Inc. in Bentonville, Ark., used their purchasing power to force manufacturers to adopt electronic data interchange (EDI) and automated inventory replenishment, they could force manufacturers to incorporate POS data into their forecasting and replenishing processes.

For IS executives, the message is clear: Start developing systems to deal with POS data. Begin integrating hardware and software throughout the company. Then use those systems to drive the entire order creation, resource planning and manufacturing process.

It won't be easy.

Frightful volume

For starters, the sheer volume of POS data is enough to scare off many manufacturers. "You are talking about hundreds of times of increase in the amount of data you are running," says Tony Ferrante, manager of customer service and logistics at Rubbermaid, Inc. in Wooster, Ohio.

Ferrante says Rubbermaid's current system can handle the load. However, Greg Owens, managing partner of logistics strategy practice at Andersen Consulting in Chicago says even the largest manufacturers aren't equipped to act on POS data.

Owens recalls a recent meeting he attended of "one of the Top 3 largest retailers and one of the Top 3 manufacturers." At the meeting, Owens recalls, the retailer handed the manufacturer a printout of one day's POS data. The manufacturer said, "I can't do anything with this."

Scarce software

As hardware becomes more powerful and prices drop, the cost and feasibility of crunching POS data will become less of an issue. In the meantime, however, replenishment and logistics software for handling daily POS data and combining it with other data is just becoming available. Only seven manufacturers use a Unix/Oracle Corp.-based solution from IRI Logistics, Inc., a wholly owned subsidiary of Information Resources, Inc. in Chicago. A partnership between A. C. Nielsen Co. in Schaumburg, Ill., and Manugistics, Inc. in Rockville, Md., includes plans to have a similar solution available next year.



Disintegration

Another problem is that most manufacturers still haven't integrated their systems to take full advantage of the information they already collect from retailers. At Warner-Lambert, Inc. in Morris Plains, N.J., for example, the inventory replenishment system isn't integrated with production planning. Each of its business units has its own manufacturing systems.

Is the data correct?

Often the POS data that retailers capture isn't entirely accurate. "Historically, the data has been so bad that it would take you months to clean it up," Youngs says.

One problem is that sale prices often aren't entered into POS systems or are entered incorrectly. Clerks often don't scan each item when they ring up more than one item of a similar type. When that happens, important details such as the type of soup or the color of a shirt are lost.

Can't get it

Clean or not, POS data isn't always available. Many retailers — particularly in the grocery industry where third-party vendors obtain raw POS data, clean it and then sell it — won't share POS information directly with manufacturers.

Culture clash

Sometimes corporate cultures get in the way of change. That's a problem Warner-Lambert is trying to overcome. Since October, the company has been using a combination of warehouse withdrawal data and promotion schedules to develop replenishment orders for Kmart Corp. and other retailers. But Warner-Lamberi salespeople, who develop price and promotion schedules together with their retail clients, aren't used to talking with Warner-Lambert inventory management analysts, who oversee the replenishment process. That communication is critical for using POS data to accurately forecast consumer demand.

"The reality is we need to work a lot harder to make sure there is a freer exchange back and forth," says Jay Nearnberg, director of partnership technologies at Warner-Lambert. One idea to improve this is to offer an incentive program that encourages team work.

Despite stumbling blocks to a smoother, more efficient supply chain, merchants eventually will use their market power to force change, much as they did to force manufacturers to adopt EDI. The three largest mass merchants — Wal-Mart, Kmart in Troy, Mich., and Target Stores in Minneapolis — account for $74 billion in annual sales, according to *Discount Store News*.

"The manufacturers are going to have to take ownership of this [POS] data," Owens says. Like it or not, working with daily POS data is likely to become a reality for manufacturers. ■

Wilson is a freelance writer in Glen Ellyn, Ill.

Wrangler, Inc.

Reaping what they SEW

Wondering about the payoff from POS? Wrangler, Inc., a Greensboro, N.C.-based subsidiary of V. F. Corp., is one of a handful of manufacturers that combine daily POS data with other information to gauge when to replenish retailers' shelves.

Despite the difficulties of working with POS data, the results of the program have been impressive. Last year, Wrangler's sales increased 20% over 1993. Jeff Kemodle, vice president of replenishment at Wrangler, attributes much of this increase to the company's use of POS data. Kemodle spent 25 years in Wrangler's information systems department before taking his current post. However, his former department still has responsibility for designing the replenishment systems.

POS data is just one food group in Wrangler's information diet. The company also uses historical data to create seasonal profiles of sales for each style, size and color of pants that it sells. This is combined with information about promotions to create a forecast of what will be sold in the future. All of this information is updated daily, and an order is created when a clients' store needs 12 or more units of merchandise. The goal is to stock two weeks worth of supplies at each store, Kemodle says.

Wrangler uses an IBM ES9000 running IBM's Inforem, a forecasting and order replenishment package.

The project has been a massive undertaking for IS primarily because of the large database — 200 million records for 1994 and 1995 — and it continues to grow. "They have to store the data and give us access to all the data. Plus, they have to give us tools to analyze it," Kemodle says.

The company replenishes stock at 7,300 stores, primarily mass merchants. Wrangler also ships merchandise directly to 6,500 of those stores, approximately half of the total number of stores nationwide that sell Wrangler jeans and other clothes.

"The most difficult thing in this whole process is maintaining an accurate inventory," Kemodle says. That's because the inventory figures don't factor in merchandise that is moved between stores or stolen, he says.

Wrangler has also been working on a neural network for a year and a half to develop forecasts for its production planning system. The system was developed by Neil Thall Associates, an Atlanta consultancy, and tracks the number of stores a product is carried in, the retail space allotted to a product, the retail price, sale price and promotion and holiday schedules.

But Wrangler has no plans to replace its current replenishment system with a neural network. "The jury is still out on if neural networks do a better job predicting the future than Inforem," Kemodle says.

— Linda Wilson

You can't afford NOT to train your people

Investing in the training and development of your staff does more than boost morale and company loyalty — it can pay off on the bottom line

A panel of university and industry researchers has confirmed a familiar refrain. Investments in information systems staff and technology and smart business practices will make companies more profitable when they use total quality management or just-in-time programs.

The latest confirmation comes from the findings of a two-year study on workplace strategies, "Competitive Renewal Through Workplace Innovation: The Financial & Non Financial Returns to Innovative Workplace Practices" was conducted for the Department of Labor by the Harvard Business School, the Wharton School of Business and Ernst & Young's Center for Business Innovation. It looks at the collective results of more than 500 studies in the past 20 years on the relationships between workplace practices and financial and nonfinancial performance.

The study found that 85% of U.S. firms sponsor employee involvement or total quality management programs. Total quality management and just-in-time programs are most successful when implemented with a strong employee training and empowerment program. This is especially true in service environments, where employees interact with customers.

Investment portfolio

Companies can increase their profitability by investing in the following:

- **Employee development and training**
- **Cross-functional training and employee participation**
- **Total quality management practices**
- **Customer quality programs**

The bottom line?

What can companies expect as a return on their investments? The study finds the following big gains for companies with innovative training and business practices:

TRAINING OR BUSINESS PRACTICE	PROFIT OR PRODUCTIVITY GAINS
Formal employee training programs	19% rise in productivity in three years
Above-average total quality management effort	15% rise in returns in five years

Source: Ernst & Young's Center for Business Innovation, Cambridge, Mass.

Bank IS spending earns low returns, study finds

Only 30% of technology spending in the banking industry in the past five years has had a "noticeable impact on return on equity." And even then, other factors were at play to question the role of IS.

Those are among the findings of a recent survey of chief information officers and heads of retail and wholesale banking operations at 53 of the leading 150 banks. Conducted by The Tower Group in Wellesley, Mass., and Anderson Consulting in Chicago, the survey looked at IS investments and overall corporate performance in the banking industry. It found that 30% of IS investments had a noticeable impact on return on equity; 33% gave the bank new capabilities which could not be connected to an improvement in return on equity; and another 33% neither improved return on equity nor significantly helped the bank achieve business goals. The remaining 4% were "essentially a waste of money."

Why such a dismal track record? The study says legacy systems are largely to blame, with enormous maintenance appetites eating away at barely increasing resources. This is hindering investments in newer technologies that could better deliver on the bottom line.

Poor long-term technology vision and relationships between IS and business units are also factors.

New books, videos and CD-ROMs

IS Managers' Bookshelf

"Client/Server in Perspective"
"IS Department Guidebook to Client/Server Computing"

These reports, by two of the Society for Information Management's (SIM) "working groups," provide practitioner perspectives on the cultural, management and technical issues of client/server. "Client/Server In Perspective" details the experiences of IS professionals, while the guidebook is designed to help clarify issues related to planning and implementing these systems. (SIM, Chicago (312) 644-6610; $75 each for SIM members, $150 each for nonmembers.)



Using Email Effectively
By Linda Lamb and Jerry Peek
When You Can't Find Your Unix System Administrator
By Linda Mui

These are the first two installments in O'Reilly & Associates' "What You Need to Know" series — books written for end users (not information systems technicians) who need fast answers to business computing questions. Clearly written and well organized, these books could take some heat off your help desk. (O'Reilly & Associates, Sebastopol, Calif. (800) 889-8969; *Using Email Effectively*, 160 pages, $14.95; *When You Can't Find Your Unix System Administrator*, 140 pages, $19.95.)



Emerging Patterns of Innovation: Sources of Japan's Technological Edge
By Fumio Kodama

Japan's top expert on technical innovation reveals the secret of Japan's top manufacturers: They ferret out "unarticulated wants" and emerging markets, turn them into a product concept, then break new product ideas into technical development agendas. Although not targeted at IS, the book contains powerful insights about the connection between innovation, technology and information. (Harvard Business School Press, Boston (800) 545-7685; 304 pages, $35.)

Online Marketing Handbook: How to Sell, Advertise, Publicize and Promote Your Products and Services on the Internet and Commercial Online Systems
By Daniel S. Janal

Want to understand the business side of doing business on-line? This comprehensive, nontechnical guide to on-line marketing and sales takes the reader step by step through marketing plans, overviews of the Internet and commercial on-line systems, design of World Wide Web pages and internet etiquette. Case studies of successful Web sites as well as an excellent guide to market research on the 'net are included. (Van Nostrand Reinhold Publishing Co., New York (800) 842-3636; 370 pages, $24.95.)

Technimanagement: The Human Side of the Technical Organization
By Davis B. Brown

This work covers important topics such as morale, leadership and conflict management. But turgid, even unfathomable prose makes this a deeply flawed book. (Prentice Hall, Englewood Cliffs, N.J. (800) 947-7700; 391 pages, $34.95.)

— Allan A. Alter and Laura Hunt

CONFUSION. CHAOS. MADNESS.

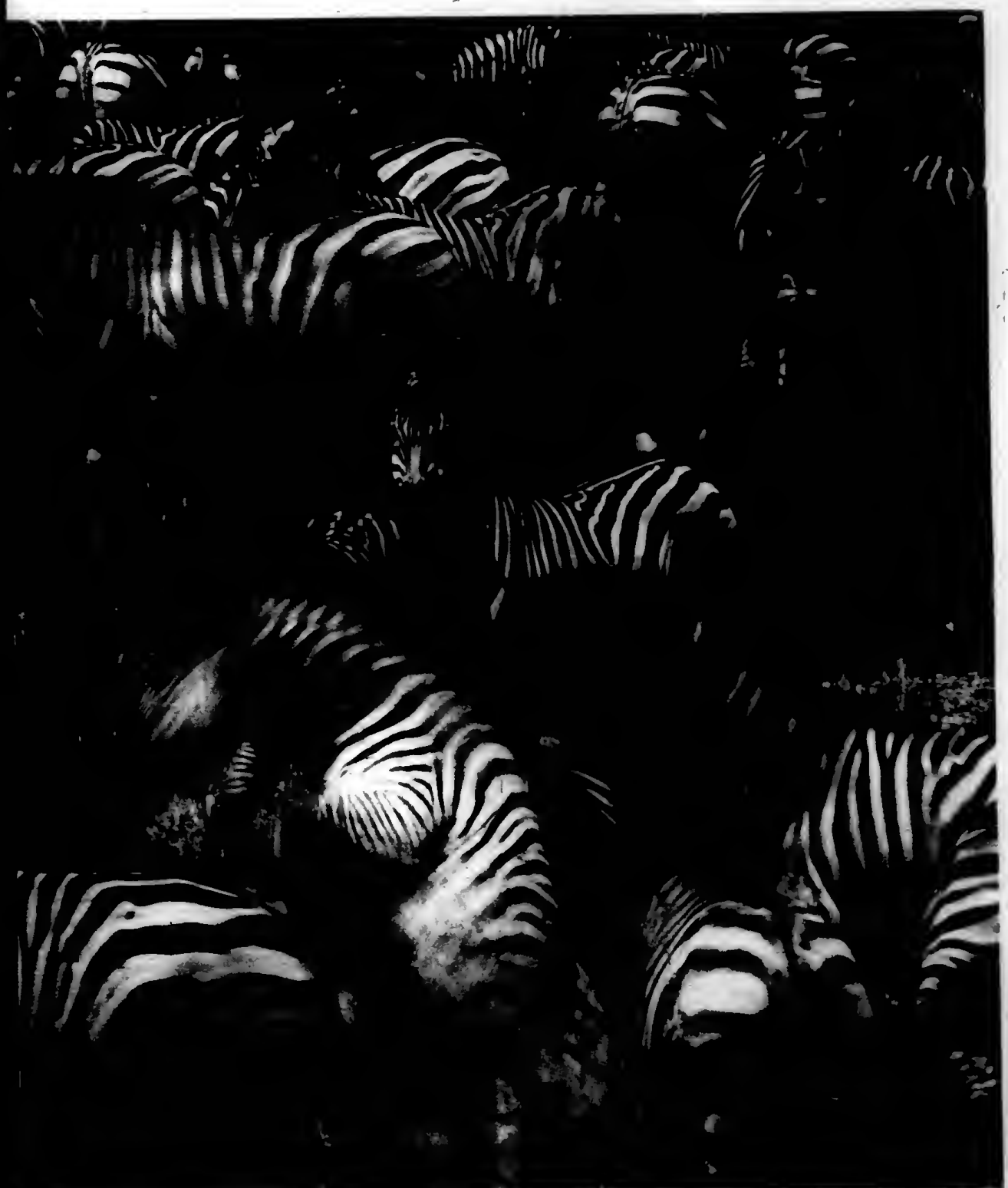


Multiple computing platforms. Multiple operating systems. Multiple vendors. Let's face it—it's nuts out there. In an effort to make some sense out of this mayhem, PLATINUM introduces a radically simple solution called the PLATINUM Open Enterprise Management System, or POEMS. By automating and integrating critical IT functions of both mainframe and open client/server systems, POEMS systems management tools finally make it easy to manage and share information in a truly open environment—one that encompasses all computing platforms. We can even integrate software you already own with the software solutions we provide. Whatever it takes to bring order to the chaos. For more information on the POEMS architecture or our systems management tool set, just turn the page.

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The Open Enterprise Management Company

PLATINUM TECHNOLOGY



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Calendar

JULY 30 - SEPT. 14

MANAGEMENT

Information Systems Audit and Control Association Annual International Conference. Los Angeles, **July 30-Aug. 4** — Topics include the information superhighway, wireless communications, client/server and automation. Contact: Information Systems Audit and Control Association, Rolling Meadows, Ill. (708) 253-1545.

Scaling Walls: Matching Business Requirements to Client/Server Application Development. Cambridge, Mass., **Aug. 8-10** — Seminars include "Empowering, Managing and Implementing Business Change with Client/Server Technology: The Corporate Perspective," "Managing Business Applications in a Distributed Environment: Tools of the Trade," "Staffing Requirements for the Brave New World: Whom Should You Hire to be Competitive Beyond the year 2000?" and "Restructuring IS to Take Advantage of Object-Oriented Technologies. Fee: $995. Contact: MIS Training Institute, Framingham, Mass. (508) 879-7999.

Information Superhighway Summit. Santa Clara, Calif., **Sept. 11-14** — Topics include the information superhighway's course in the coming year, changes in content and technology, telephone and cable regulation/deregulation and the effect of wireless offerings on telephone and cable companies. Contact: IDG World Expo, Framingham, Mass. (508) 879-6700.

USER GROUPS

The 1995 ParcPlace International Users Conference. San Jose, Calif., **July 30-Aug. 2** — Conference will feature vendors demonstrating leading ParcPlace Systems, Inc. products. Contact: Tim Bostwick, Action Motivation, San Francisco, Calif. (800) 340-2111.

Microsoft Healthcare Users Group Conference and Exhibition. Seattle, **Aug. 6-8** — Focus is on information, solutions and leading-edge uses of Microsoft Corp. technologies in health care. Contact: Microsoft Healthcare Users Group, Ann Arbor, Mich. (313) 973-1985.

TECHNOLOGIES

Washington Software Association (WSA) Northwest Developers Conference. Seattle, **Aug. 2-4** — Topics include quality assurance, C++, multimedia, database and an entrepreneurs' track. Fees: $395 for WSA members ($445 after July 30) and $495 for nonmembers ($545 after July 30). Contact: Prestige Events, Inc., Bellevue, Wash. (206) 562-8841.

TCP/IP Expo. San Jose, Calif., **Aug. 6-10** — Topics include TCP/IP network design, TCP/IP application stacks, preparing for the future of TCP/IP, managing TCP/IP internetworks and accessing the Internet. Keynote speakers include Larry Walker, vice president and general manager for network product business at Digital Equipment Corp., and Jon Kannegaard, president of SunSoft, Inc. Contact: Robin Leven, Cardinal Business Media, Ambler-Blue Bell, Pa. (215) 643-8027.

INDUSTRIES

Market Driven Product Definition — Best Practices Implementation. San Francisco, **Aug. 21.** — Also offered **Sept. 30** in Phoenix and Scottsdale, Ariz., and **Oct. 26** in Atlanta. Topics will include resourcing product definition efforts, linking products to strategy, conducting successful customer visits, defining customer requirements and creating and maintaining customer focus throughout product development and self-assessment. Fees: $895 per person; $795 per person for groups of three to five people; $745 per person for groups of six or more. Contact: The Management Roundtable, Boston, Mass. (617) 232-8080.

Calendar announcements should be submitted at least six weeks prior to the event and include the title of the event, dates, location, theme or focus, keynote or major speakers, principal topics and a contact person, organization and phone number.

SEND ANNOUNCEMENTS

David Weldon, Associate Editor/Management, Computerworld, 375 Cochituate Road, Framingham, Mass. 01701. Fax: (508) 875-8931.



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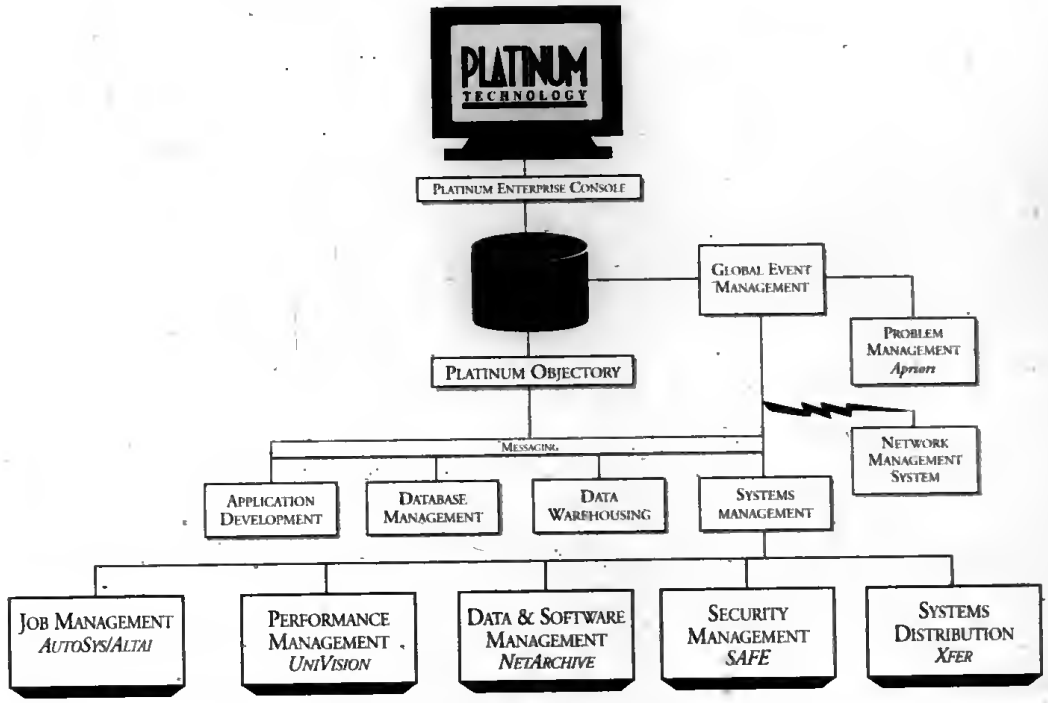
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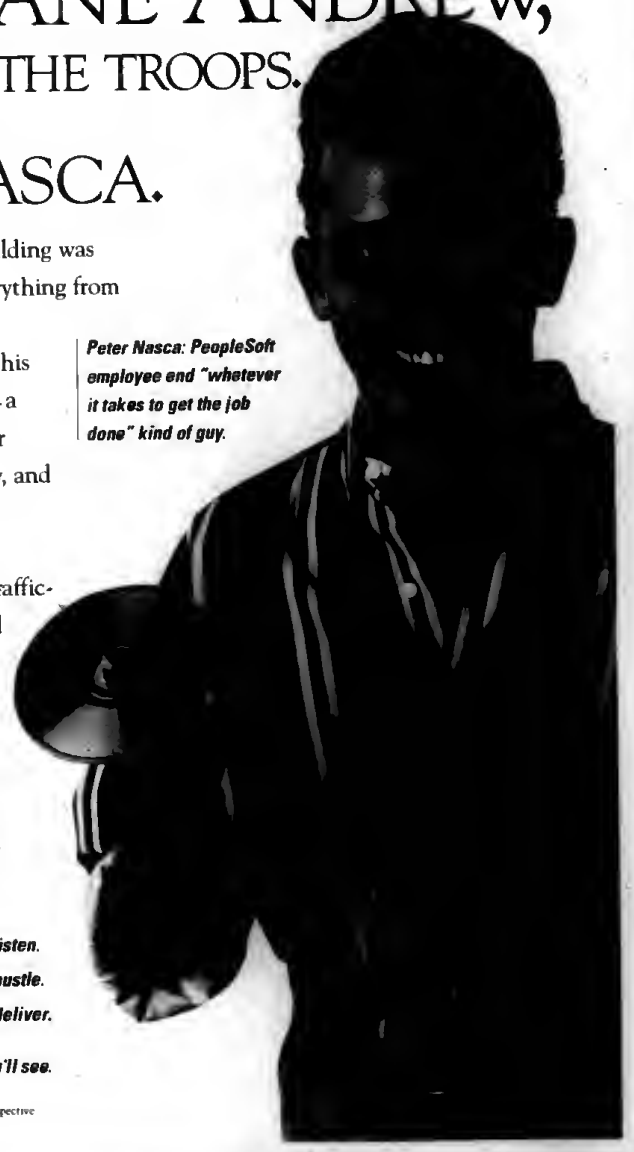
WE SENT PETER NASCA.

The customer's old headquarters lay in ruins. Their new building was still under construction. And the roads were jammed with everything from refugees to roofers' trucks.

That was the situation facing PeopleSofr's Peter Nasca and his software implementation team when they landed in Florida on a stormy August morning, just days after Hurricane Andrew. Our customer, ProSource, was spinning off from its parent company, and needed to be up and running with PeopleSofr by December 31. Come hell or high water.

Despite the rubble, despite spotty electric service, despite traffic-choked highways, Peter and his team successfully implemented the software. He even flew back to Miami on Christmas Day to ensure the system would be up and running, smoothly and on time. The result: another satisfied customer for PeopleSoft.

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The CW Guide to DBMSs

THE PARALLELISM PUZZLE



By Richard Finkelstein

Cheap and efficient scalability is one of the great business benefits of the ongoing computer revolution. In the mainframe era, upgrading computing power was a source of grief because of its cost and impact on ongoing operations. Today, low-cost symmetrical multiprocessors (SMP) and multitasking operating systems make it possible to incrementally increase computer capacity with minimal effect on operations.

But simply adding computing power does little good if the software — such as the database management system — cannot effectively utilize the increased capacity. DBMS vendors had to redesign their software so they could effectively schedule a large number of simultaneous database tasks across multiple processors and disk devices.

As a result, "parallel" versions of leading DBMS software have recently been introduced. These include Oracle Corp.'s Parallel Server, Informix Software, Inc.'s Dynamic Scalable Architecture, Sybase, Inc.'s Navigation Server and IBM's DB2 Parallel Edition. In some cases, these systems have been successfully scaled up to partition tasks over multiple SMPs in a massively parallel processing (MPP) configuration.

While each of the major DBMS vendors has moved into parallel processing, the differences in their approaches and architectures present potential customers with many decisions. Buyers should enter the market armed with questions.

Parallel processing is most useful when tackling very large databases (VLDB) or applications with high transaction volumes. Those applications typically involve databases containing many gigabytes of information. Rather than scan the databases sequentially, a DBMS designed for parallel processing initiates several concurrent searches, cutting processing time to a fraction of what was previously required. Transactions are not forced into a queue waiting for a single CPU. Instead,

Puzzle, *page 84*

DBMS vendors and their users piece together multiprocessor strategies

Finkelstein is president of Chicago-based consultancy Performance Computing, Inc. David McGoveran, president of Alternative Technologies, a consultancy in Boulder Creek, Calif., contributed to this feature.

Inside:

"DIFFERENTIATION IS THE PASSWORD for database vendors, who are trying to distance themselves from competitors with unique tools and data warehousing strategies. *Page 85*

"THE BIG NAMES in Unix DBMSs fared well in Computerworld's Buyers' Satisfaction Scorecard. *Page 86*

Computerworld Editorial Calendar

July - September, 1995

Issue Date	Ad Closings Color*	B&W	Editorial Features & Custom Publications	Show Distribution & Ad Readership Study Issues
July 3	June 16	June 23	**CW Guide To: PDAs** Personal Digital Assistants, the latest evolution of microprocessor power in a small package, present unique buying options and support issues for IS organizations. This Guide will examine the leading products and tasks IS has in selecting and managing them. **Buyers' Satisfaction Scorecard:** Market leading PDAs **Firing Line:** Newest PDA from a leading vendor	
July 10	June 23	June 30	**Closer Look:** Unisys	Starch Study
July 17	June 30	July 7	**CW Guide To: DBMS** The focus of database management systems is as the server for a variety of applications. Depending on the application type, IS organizations face varied buying decisions. We will examine which databases match which application needs best and analyze the leading products in each area. **Buyers' Satisfaction Scorecard:** Market leading SQL database mgmt. systems for midrange servers **Firing Line:** Latest DBMS from a leading vendor	
July 24	July 7	July 14	**Closer Look:** Power Macintosh	**Enterprise Computing** Chicago 7/26 - 7/28
July 31	July 14	July 21	**CW Guide To: Workgroup and Collaborative Software** Beyond e-mail and document management users are seeking products that help them manage business processes and work as teams. This Guide will examine how well the vendors are meeting this need. **Buyers' Satisfaction Scorecard:** Market leading workgroup software **Firing Line:** Latest collaborative product from a leading vendor	
Aug.	June 28		**Computerworld Client/Server Journal** **Vertical Market Focus:** Insurance **Section Feature:** Product Focus on Networking	Object World Networks Expo Interop + Networld Unix Expo — Harvey Study
Aug. 7	July 21	July 28	**Special Report:** Re-engineering the Workplace	
Aug. 14	July 28	Aug. 4	**CW Guide To: Desktop Databases** Personal databases that act as front ends to company applications and DBMS, as well as PC-based packages that serve the needs of workgroups or departments will be examined with the focus on IS buying decisions. **Buyers' Satisfaction Scorecard:** Market leading desktop databases **Firing Line:** Latest DBMS from a leading vendor	**Object World** San Francisco 8/15 - 8/17
Aug. 21	Aug. 4	Aug. 11	**Closer Look:** Sun Workstations	
Aug. 28	Aug. 11	Aug. 18	**CW Guide To: Client/Server Financial Applications** One of the first applications companies move off of the mainframe is financials. But only recently have the vendors begun producing true client/server offerings. We'll look at how users like them and what more they need. **Buyers' Satisfaction Scorecard:** Market leading client/server financial software **Firing Line:** Latest client/server financial software from a leading vendor	Starch Study
Sept. 4	Aug. 18	Aug. 25	**Special Report:** Annual Salary Survey	
Sept. 11	Aug. 25	Sept. 1	**CW Guide To: Internetworking Routers and Hubs** Facing competition from many areas, routers and hub vendors are adding capabilities and repositioning themselves. How do these changes affect IS buying plans and what is the future internetworking product set? **Buyers' Satisfaction Scorecard:** Market leading hubs and routers **Firing Line:** Latest hub or router from a leading vendor **Custom Publication:** Object Application Awards Supplement	**Networks Expo** Dallas 9/12 - 9/14 — Starch Study
Sept. 18	Sept. 1	Sept. 8	**Closer Look:** Client/Server Manufacturing Software	
Sept. 25	Sept. 8	Sept. 15	**CW Guide To: ATM Switches** ATM is becoming more widely installed and product offerings are multiplying. What are the benefits and caveats of this new high-performance technology? **Buyers' Satisfaction Scorecard:** Market leading ATM switches **Firing Line:** Latest ATM software from a leading vendor **Custom Publication:** White Paper on The Business Case for Client/Server (part 3 of 4-part Enterprise Software Directions Series)	**Interop + Networld** Atlanta 9/25 - 9/29 **Unix Expo,** New York City 9/26 - 9/28

Editorial contacts (508) 879-0700 Management Features: Allan Alter, Closer Look: James Connolly, CW Guide To: Michael Sullivan-Trainor, Buyers' Satisfaction Scorecard: Michael Sullivan-Trainor, Firing Line: Kevin Burden, Re-engineering the Workplace & Electronic Commerce: Joe Maglitta
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* Includes ads within special editorial features and premium positions

Computerworld Editorial Calendar October - December, 1995

Issues Dates	Ad Closings Color*	B&W	Editorial Features & Custom Publications	Show Distribution & Ad Readership Study Issues
Oct. 2	Aug. 23		**Computerworld Client/Server Journal** **Vertical Market Focus:** Transportation **Section Feature:** Product Focus on Database Tools	Software Developers' Conference — Harvey Study SIM Fall Conference
Oct. 9	Sept. 15	Sept. 22	**Closer Look:** Lotus **Custom Publication:** White Paper on Manufacturing Technology: Managing for Change (part 3 of 4-part Manufacturing Series)	**Software Developers Conference** Washington, D.C. 10/3 - 10/7
Oct. 16	Sept. 22	Sept. 29	**CW Guide To: Large Scale Servers** Mainframes, massively parallel multi-processors and supercomputers have their place in large corporations where data and applications require enormous processing power. How do the leading products shape up in this category and how much flexibility do they offer IS? **Buyers' Satisfaction Scorecard:** Market leading large scale systems **Firing Line:** Latest large scale system from a leading vendor	
Oct. 23	Sept. 29	Oct. 6	**Closer Look:** ISDN Update/Frame Relay	Starch Study
Oct. 30	Oct. 6	Oct. 13	**CW Guide To: Network Operating Systems** As operating systems take on more management capabilities, the buying decision changes. IS managers must look at the benefits of increased functionality and the trials of implementing it. What are the NOS trade-offs? **Buyers' Satisfaction Scorecard:** Market leading LAN operating systems **Firing Line:** Latest LAN operating system from a leading vendor	**SIM Fall Conference** Orlando, FL 10/22 - 10/25
Nov. 6	Oct. 13	Oct. 20	**Closer Look:** PC Storage **Special Issue:** Campus Edition (mails 10/31)	
Nov. 13	Sept. 27		**Computerworld Client/Server Journal** **Vertical Market Focus:** Brokerage **Section Feature:** Product Focus on Development Tools	Comdex Fall — Harvey Study Mobile World Client/Server World DB Expo
Nov. 20	Oct. 20	Oct. 27	**CW Guide To: Object-oriented DBMS and Development Tools** Is object-oriented the next wave in DBMS or is it an embedded technology that will gradually simply add functionality to present offerings? This question and how it affects IS buying decisions will be examined. **Buyers' Satisfaction Scorecard:** Market leading object-oriented DBMS **Firing Line:** Latest object-oriented DBMS from a leading vendor	Starch Study
Nov. 27	Oct. 27	Nov. 3	**CW Guide To: Desktop PCs** Pentium, PowerPC and other platforms will be examined with regard to the migration issues and performance gains they provide. **Buyers' Satisfaction Scorecard:** Market leading desktop PCs **Firing Line:** Latest desktop PC from a leading vendor	**Comdex Fall** Las Vegas 11/13 - 11/17
Dec. 4	Nov. 3	Nov. 10	**Special Report:** Electronic Commerce	
Dec. 11	Nov. 10	Nov. 17	**Closer Look:** Internet Browsers	**Mobile World** Boston 11/28 - 11/30
Dec. 18	Nov. 17	Nov. 22*	**Closer Look:** Visual Development Tools **Custom Publication:** White Paper on Service Solutions for Client/Server (part 4 of 4-part Enterprise Software Directions Series)	**Client/Server World** — Starch Study Chicago 12/5 - 12/7 **DB Expo** New York City 12/5 - 12/7
Dec. 25 Jan. 2	Nov. 22*	Dec. 1	**CW Guide To: Messaging Software and E-mail** With e-mail going through a major architectural change to client/server, the market will have a very different shape. IS should be able to purchase products that better address company needs. **Buyers' Satisfaction Scorecard:** Market leading e-mail software **Firing Line:** Latest e-mail package from a leading vendor **Custom Publication:** White Paper on Manufacturing Acquisition Strategies: A Guide for User Empowerment (part 4 of 4-part Manufacturing Series)	
Jan. 8	Dec. 1	Dec. 8	**Closer Look:** Contact Management Tools	
Jan. 15	Dec. 8	Dec. 15	**Annual Forecast Issue** (1996 issue)	

* Includes ads within special editorial features and premium positions. * Please note early advertising close.

PUZZLE

CONTINUED FROM PAGE 81

many transactions and DBMS tasks can be processed simultaneously, thereby increasing overall system throughput.

Where are the bottlenecks?

A customer evaluating parallel DBMSs should look for the amount of parallelization supported by the DBMS and whether there are architectural barriers that could prevent the DBMS from scaling up as more CPUs are added to the computer.

The trick to parallel processing is to evenly schedule tasks, or load balance, across all available resources so all available processors are used effectively. If the DBMS was not designed to parallelize tasks or if bottlenecks develop in the I/O subsystem, the results may be disappointing.

How fast does it run a backup?

A good example of I/O-intensive tasks are database administration utilities. Most major DBMSs now have parallel-processing utilities that speed up database administration tasks such as database load, backup/recovery and index builds. Without parallel utilities, it might take several hours or even days to perform these operations for a VLDB.

One of the questions you might ask when evaluating parallel DBMSs is how fast can they back up and restore large databases? Parallel utilities can read and write data simultaneously to multiple storage devices. As an example, Sybase's Backup Server is a special application that can simultaneously read one or more Sybase databases and back them up in parallel to multiple tape drives.

In an on-line transaction processing (OLTP) environment, it is important that the DBMS is able to schedule and simultaneously execute as many transactions as possible by maximizing the use of all available processors and disk devices in many cases, a single processor may be sufficient because disk I/O is often the performance bottleneck. To reduce the time a task has to wait for its I/O operations, a DBMS should be able to asynchronously schedule (for example, schedule in parallel) multiple disk I/O operations across multiple I/O channels. In some cases, the DBMS will anticipate read requests, even before a task requests the data, using asynchronous read-ahead fetching.

Threads or processes?

Each user connection or unit of work within a transaction can be handled separately by operating system processes (units of work created by the operating system) or threads. Threads are more efficient than processes because threads use less memory and fewer CPU resources and are more predictable.

For example, Microsoft Corp.'s SQL Server is closely integrated into its Windows NT operating system and tries to maximize the use of NT's operating system threads. SQL Server spawns an operating system thread for each unit of work that has to be performed and then allows Windows NT to schedule the work on any available processor.

Informix's Virtual Processor creates multiple parallel operating system processes, each of which can spawn multiple threads that can service multiple client connections and requests, such as SQL commands. This architecture and Sybase's approach permit a high level of parallelization. However, Sybase does run into network bottlenecks because only one server process is responsible for managing all network messages.

Oracle is a process-based database server that has incorporated a simulated threading architecture. Each user request is placed in a queue, and Oracle will start up one or more database server processes to service these requests. Simulated threading is not true threading because it still uses operating system processes, not threads. However, by queuing requests instead of maintaining a process for each user connection, simulated threading helps eliminate some of the memory overhead associated with the process architecture, although there is still the overhead of using processes instead of threads. IBM also uses a process-per-user architecture in its DB2/6000 product.

While there are advantages to each approach, both provide adequate support for parallel processing and SMPs, and users stand to reap the benefits of parallelized databases.

PARALLEL THOUGHTS

Users of each database are equally confident that parallel server capabilities will show up in their systems. And judging by the importance users place on these capabilities, vendors had better come through.



Percent of respondents: Based on 185 RDBMS users evenly split among IBM, Informix, Oracle and Sybase databases

DEFINITION

Parallel database processing:

The technique of utilizing two or more concurrent operating system processes or computer processors while servicing a database management request such as SQL queries and updates, transaction logging, I/O handling and data buffering.

Decision-support complexities

When evaluating a DBMS for decision-support systems, it is important to understand the granularity of parallel processing. It is not only important to run several queries in parallel but to be able to dissect an individual query into several parallel operations.

Decision-support systems are different from OLTP because the queries are usually fewer in number and more complex. For such queries — often associated with data warehousing applications — it is most important to be able to process a single query in parallel.

The relational database management system must figure out how to decompose the query into multiple operations, run the operations in parallel and then merge the results from the operations into a single answer. Typically a DBMS with parallel query capabilities will attempt to parallelize table scans and record selection, sorts, joins, group by and aggregate operations.

Oracle's parallel query system runs on very large SMPs. The query is split into several processes across multiple CPUs. Each CPU is capable of independently performing disk operations. Tasks such as joining and sorting data can also be performed in parallel. One restriction is that Oracle cannot use indexes when performing parallel queries.

Informix's parallel query is somewhat more robust. Informix allows a database administrator to partition tables across multiple disks. Partitioning helps eliminate bottlenecks that can develop if a given table is heavily accessed by queries.

Unlike Oracle, Informix can access indexes in parallel, so it does not have to resort to table scans for each parallel query. Informix has the ability to change many system parameters dynamically, while the system is in use.

While Oracle and Informix rely on SMPs to handle very large decision-support systems, Sybase and IBM have opted to scale up their products to MPPs. MPPs consist of clusters of independent computers. Both Sybase and IBM implement a "Share Nothing" architecture in which each computer acts independently and does not share resources with other computers.

Sybase's Navigation Server partitions data across the clusters based on ranges of keys, individual tables or a "hashing" formula that spreads data randomly but evenly across disks. Partitioning data is a tricky business because it is important that data be partitioned in such a way that each computer will be kept equally busy when processing an average mix of queries.

IBM's DB2 Parallel Edition closely matches the capabilities of IBM's own RS/6000 Scalable PowerParallel (SP2) systems. The DB2 Parallel Edition's optimizer attempts to perform sorts, unions, aggregations and joins on each node in the MPP configuration. IBM provides a Rebalance Utility that can redistribute data over existing nodes if hot spots develop while processing queries.

With the SP2 architecture, it is possible to create a network of hundreds of nodes — all processing a given query and database simultaneously, tackling databases in the terabytes range, while still achieving excellent response time.

— Richard Finkelstein

OLAP: SLICE, DICE AND HAVE IT ALL MAKE SENSE

DECISION SUPPORT CONSIDER ALL THE OPTIONS

EIS: THE FACTS IN FULL VIEW

CAN YOUR SOFTWARE, AND YOUR COMPANY PASS THE BUSINESS INTELLIGENCE TEST?

THE SAS®

MANAGEMENT REPORT

NEWS TRENDS OPINIONS AND IDEAS FOR INFORMATION MANAGERS

HOW TO TAKE THE GUESSWORK OUT OF BUSINESS DECISION MAKING *(WITH A FREE GUIDE TO GIVE YOU AN INTELLIGENT START)*

The key to better decision making is giving knowledge workers access to better information. Business Intelligence (BI) solutions are meant to do just that...in the most timely and efficient way possible.

But all BI solutions aren't created equal. In this issue of MANAGEMENT REPORT, SAS Institute's John McIntyre—Program Manager, Business Intelligence—offers ideas for tapping into your company's information reservoir to fuel fact-based decisions at every level.

"The concept of Business Intelligence offers the best answer for empowering knowledge workers with the information they need to reach the right decisions at the right time," says McIntyre.

What exactly **is** Business Intelligence software? "It's software that allows business users more time to answer questions, by reducing the time they must spend searching for information."

McIntyre adds that "knowledge workers aren't intended to be computer programmers. That's why Business Intelligence software must be **easy to use** as well as **flexible**—to adapt easily to changing information needs within and among departments, and **interoperable**—to make the process of sharing data and applications between computing environments both automatic and transparent."

According to McIntyre, business intelligence software should also be **integrated** to enable knowledge workers to contribute to all levels of business decision making, which include:

DISCOVERY AND QUERY

The power to spot a business trend, opportunity, or problem area by examining the wealth of data residing throughout the whole enterprise.

(continued on next page)





ANALYSIS AND CONFIRMATION

The means to examine *relationships* among trends variances, and market segments to separate reality from perception

PRESENTATION

The tools to deliver powerful, persuasive reports and graphs that communicate information in time to take action

McIntyre adds that "**many technologies converge within Business Intelligence—everything from On-Line Analytical Processing (OLAP) to Enterprise Information Systems (EIS) to Decision Support Systems (DSS).** There's also a need for effective **Query and Reporting** as well as **Data Visualization** tools None of these technologies alone provides a complete BI solution But when you bring them all together and add the appropriate interfaces, you have a solution that works for the entire enterprise"

OLAP: SLICE, DICE, AND HAVE IT ALL MAKE SENSE

"To spot trends and exceptions in business conditions, knowledge workers need access to all relevant data in a timely fashion," says McIntyre. "On-Line Analytical Processing is ideal for putting decision makers in touch with the data they need. OLAP enables them to slice and dice data quickly, so they can identify trends and exceptions literally on-the-spot."

As an example McIntyre points to SAS Institute's own software, which combines the power of multidimensional data analysis with the flexibility of intuitive business objects Business managers can derive views of data, perform slicing and dicing, and serve up data in just the right portions

"The ability to access and query all kinds of data extends the reach of knowledge workers in discovery mode," explains McIntyre "While OLAP is popularly associated with tabular representations of data, knowledge workers should have access to other discovery tools such as data visualization and English-language query"

DECISION SUPPORT: CONSIDER ALL THE OPTIONS

"Decision Support Software enables high-level analysis of business data, resulting in a higher level of understanding via forecasts, financial modeling, simulation, visualization, and more," explains McIntyre. "But it's critical to choose software with sufficient breadth and depth."



Because time is at a premium among knowledge workers, McIntyre advises organizations to select an integrated decision support toolset—one designed to be both robust and user friendly.





These tools should also be tailored to work hand-in-hand with other popular personal productivity packages

"Organizations looking for enterprise-wide solutions in such areas as sales management, marketing, customer profiling, etc should take advantage of ready-to-run applications spanning these tasks and many others," McIntyre explains "What's more, knowledge workers should be able to get to these applications—and begin reaping information from them—through interfaces tailored to individual comfort levels"



EIS: THE FACTS IN FULL VIEW

"Without an effective way to make the results of business analyses accessible to everyone in the enterprise—including upper-level managers—the insights gathered by knowledge workers might simply go unnoticed," asserts McIntyre. "That's why a scalable toolset for building and maintaining an enterprise information system, one complete with the latest reporting and graphical capabilities, is now a business necessity."

Using predefined business objects, middle managers and knowledge workers can build their own customized EISs for individual or departmental use McIntyre adds that "it's important to put tools in front of knowledge workers that empower them, without forcing them first to become computer programmers They should instead be able to select from a library of pre-built objects for multidimensional data visualization, financial analysis, drilldown enabled-navigation through data, and more"

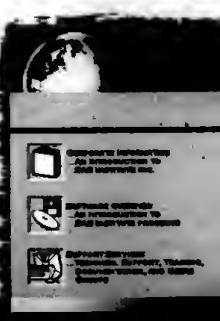
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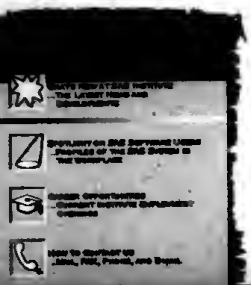
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1. What methods, tools, and techniques should be offered in an enterprise business intelligence solution?

_____

_____

_____

2. Of all the processes in your enterprise, which can benefit most from better and more timely information?

_____

_____

_____

3. Are you...

___An IT professional who supports knowledge workers

___A knowledge worker who uses decision support tools

___An executive who reviews the results of business analysis

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THE IT PERSPECTIVE
JOHN McINTYRE

CAN YOUR SOFTWA AND YOUR COMPA PASS THE BUSINE INTELLIGENCE TES

We've been looking at Business Intelligence from worker's point-of-view However, there are some hi affecting IT professionals responsible for delivering support tools.

Is the software your business is now using a true Intelligence solution . one that makes the job easier makers and those who support them? Here's an eas Take a look at the following list, which includes five business intelligence software Each statement shoul current business software

1. Breadth and Depth

By empowering your knowledge workers with fl tools for handling their own information requests, y should enjoy a reciprocal benefit. a reduction in the ity of maintaining those tools. With one software sol the gamut of applications across all your hardware p no need to purchase and support all those single-sh

2. A Consistent Interface to Data

It's essential to have direct access to different kin than 50 different databases and file formats is ideal tant, from an IT perspective, is providing one consis those data repositories. You can't afford for knowled

embark on time-consuming searches that lead to frustration and ultimately lead them back to IT for support

3. Client/Server Capabilities

A must! All business intelligence functions should be accomplished cooperatively on all supported platforms in the enterprise – from the Data Center to the desktop



John McIntyre
SAS Institute Program Manager
for Business Intelligence

4. Interoperability

In selecting a Business Intelligence solution, look for a package that includes support for popular services such as DDE, OLE, and ODBC

5. Portability

The underlying architecture of your Business Intelligence solution should assure portability across new and emerging technologies This is essential to protect your existing investment and to allow you to quickly absorb emerging technologies into your computing mix

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SNEAK PEEK: Warehouses, desktops and tools on the agenda

By Kim S. Nash

While they stridently deny that their core products are becoming commodities, Unix relational database makers will continue to differentiate their offerings with the addition of development tools and specialized data warehousing products

This mooth, for example, Informix Software, Inc. is expected to issue a so-called controlled release to select customers of its OnLine 8.0 database

The upgrade, designed to run on Unix closters and massively parallel processors (MPP), is targeted at users building giant decision-support and warehousing applications of several hundred gigabytes of data, according to Informix officials. General availability is expected in the fourth quarter.

Sybase, Inc also bas plans to take aim at warehouse projects with System 11, a database upgrade expected to address the scalability shortcomings io the company's current System 10 technoology.

Microsoft Corp.'s release late last mooth of SQL Server 6.0 is expected to set the tone for database competition for the next year or so. Microsoft has positiooed SQL Server 6.0 as a direct competitor to Oracle Corp.'s Oracle7, System 10 and other databases on Microsoft's Windows NT operating system.

One much-vaunted aspect of SQL Server 6.0 is the database's related management tools, virtually all of which are graphical. Sybase and Oracle are due to ship similar graphical user interface-based administration utilities in the next year for tasks such as performance monitoring and troubleshooting.

Meanwhile, Informix plans to deliver an NT version of OnLine in the fourth quarter. IBM plans to ship long-awaited Versioo 2 npgrades for its DB2/2 (on OS/2) and DB2/6000 (on AIX) databases.

On the low end, Oracle plans to release an IBM OS/2 Warp version of the single-user Personal Oracle7 database. That product will likely be released in conjunction with an upgrade to the Windows version of Personal Oracle7, which is slated to include replication capabilities

Elsewhere, Sybase plans to fill out its low-end product line with System 10 for UnixWare 2.0 and SybaseWare, a bundle of System 10 with Novell, Inc.'s NetWare.

But much of the splash that database vendors will make in the next 12 months will be in development tools. Upcoming announcements include the following:

- In September, Computer Associates Internatiooal, Inc. plans to ship a revamped version of the Ingres OpenRoad development kit.
- Oracle is due to ship Power Objects for OS/2 this year, after releasing Windows and Macintosh versions recently. Power Objects is Oracle's object-based takeoff on Microsoft's Visual Basic tools.
- Informix plans to add several features to its object-oriented New Era development kit. ■

BULL MARKET

While the competition has been intense in the RDBMS arena, the overall market growth has everyone looking like a winner

*Worldwide sales of relational database management systems

	1993 SALES (MILLIONS)	SHARE	1994 SALES (MILLIONS)	SHARE	% SALES GROWTH
ORACLE	$440.5	35.7%	$694.2	35.6%	57.6%
SYBASE	$214.2	17.3%	$364.6	18.7%	70.2%
INFORMIX	$177	14.3%	$331	17%	87%
CA/INGRES	$75.7	6.1%	$85.3	4.4%	12.7%
PROGRESS	$34.9	2.8%	$79.6	4.1%	128.1%
MICROSOFT	$40	3.2%	$49	2.5%	22.5%
GUPTA	$17	1.4%	$48.4	2.5%	184.7%
OTHERS	$235.8	19.1%	$299.7	15.4%	27.1%
TOTAL	$1,235.1		$1,951.8		58%

* *License sales only (support and service revenue excluded)*

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS

Tech NOTES

In doing prep work for the CW Guide to DBMSs, it became clear that for all the talk about open systems, people who are free to jump from one hardware platform or flavor of Unix to another still tend to lock into one particular technology, their database system.

Some users have a near-religious devotion to their chosen DBMS. Still other users may be tied to their DBMS for technical reasons. Their applications, even those provided by a third-party vendor, were designed to take advantage of a particular DBMS, and their staffs understand that same database. Changing database systems would be a nightmare.

When we asked 200 users why they chose their current DBMS, the percentages were down in the single digits for normally common answers such as price, ease of use and performance. More than half cited vendor support/reputation and compatibility with their environments. The DBMS is no longer the accessory it was a decade ago; it has infiltrated the information systems operation and, in many ways, is calling the shots.

This DBMS lock-in may not be a bad thing as indicated by the Buyers' Satisfaction Scorecard results presented on the following pages. As with any study, a C, or average score, is pretty common. However, we found a disproportionately high number of respondents giving their DBMS vendors "good" or "very good" grades in crucial areas such as reliability, and few users gave negative grades. This may be one sector where openness isn't everything.



James M. Connolly
Technology Evaluations Editor

The CW Guide team welcomes comments oo upcoming guides to Desktop DBMSs, Client/Server Financial Applications, and Internetworking Hubs and Routers. Does your company benefit from these technologies? What is it about them that sends chills down your spine? Send E-mail to jconnolly@cw.com

Need to know more?

Additiooal information about DBMSs is readily available via on-line forums and conferences targeted at specific vendors' database products

Two examples of geoeral purpose database shows and conferences in tbe second half of 1995 are tbe following:

- **DB/Expo '95. New York, Dec. 4-8 — Sponsored by Bienheim NDN, Inc., Mountain View, Calif. (800) 232-3976.**
- **Database and Client/Server World. Chicago, Dec. 5-7 — Sponsored by Digital Consulting, Inc. (508) 470-3870.**

On-line information

Comp databases is an Internet newsgroup filled with general topics such as data modeling and multivendor connectivity. It is also a spot where users can ask basic questions such as whether they should choose a relationnl or object-oriented database.

Users more experienced with database technology can discuss the high-level ideas behind tbe hits and bytes at comp.databases.theory.

Most of the major vendors are the subject of at least one newsgroup within the comp.databases newsgroup. For example, look for Informix's topics at comp.databases.informix. Most of those vendors also show up in forums, some of them vendor-sponsored, in the computer sections on both CompoServe and America Online.

Vendors are at various stages of implementation with buildingh ome pages on the World Wide Web. Some are full of information, while others are under construction or hold only basic pointers about exchangiog mail with vendors. Users can find these home pages by tapping into a search facility such as Yahoo or sometimes by plugging the vendor's name into the formula http://www.*vendorname*.com.

BUYERS' SCORECARD: Databases

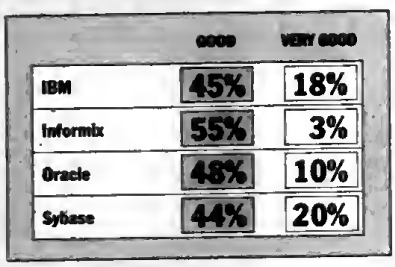
Customers spot strengths, weaknesses but give good grades to proven RDBMS technology

By Kevin Burden

Lines of distinction are blurred by time as relational database management systems mature. They all share similar features and capabilities, and overall customer satisfaction is solid.

COMPUTERWORLD BUYERS' SATISFACTION SCORECARD

To find where the vendors differ, we asked 50 users of each of the leading Unix-based RDBMSs from IBM, Informix Software, Inc., Oracle Corp. and Sybase, Inc. to rate their satisfaction with their chosen package and vendor service. The bottom line is that users of all four products are content with their choices, but the vendors show different strengths.



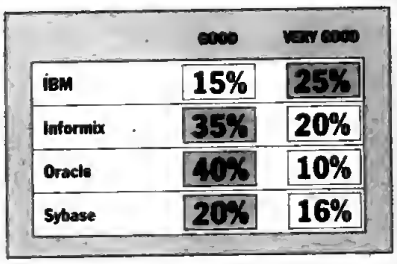
	GOOD	VERY GOOD
IBM	45%	18%
Informix	55%	3%
Oracle	48%	10%
Sybase	44%	20%

Performance

None of the four products emerged as a clear winner in terms of overall performance (see chart next page, "No bad choices"), although Sybase System 10's high score of 3.9 is made more impressive because 20% of its users called Sybase's performance "very good," the highest rating available.

Even with System 10's publicized scalability problems unresolved until the expected fourth-quarter release of System 11, some Sybase users never felt constrained. "Seventy users on one server might not seem like a lot, but our workload would stress the limits of most systems — and so far so good," says Marc Mangus, MIS manager at Geoworks in Alameda, Calif. Geoworks simultaneously runs three separate System 10 databases on a single server, with tables containing up to 100 text fields.

Informix's OnLine Dynamic Server users were more cautious with their praise. Few felt comfortable saying performance was very good, but OnLine performs well enough for the majority to say they liked it and would recommend it. "I'd like to see improvements in query speed and security. But given the chance, I'd buy it again," one user says.

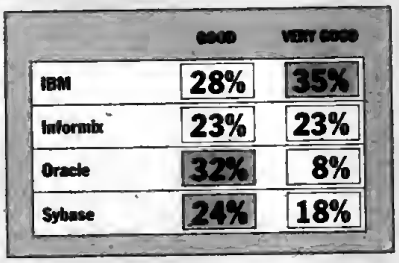


	GOOD	VERY GOOD
IBM	15%	25%
Informix	35%	20%
Oracle	40%	10%
Sybase	20%	16%

Network compatibility

Database vendors that also sell networking equipment have a natural advantage when it comes to compatibility, or do they? IBM had the most users who said its DB2 network compatibility was very good, but it also had the most who said compatibility was average at best.

DB2 users experiencing compatibility woes most likely had a mainframe-to-client/server migration in their past, says Jeff Nickerson, a technical director at Coopers & Lybrand in Edison, N.J. "Many mainframe DB2 users ran into a slew of problems when they moved to DB2 for Unix. The two versions had different code structures that brought a load of compatibility problems to those migrating old databases," he says.



	GOOD	VERY GOOD
IBM	28%	35%
Informix	23%	23%
Oracle	32%	8%
Sybase	24%	18%

Responsiveness of service

How quickly a vendor comes back with an answer is consistently rated to be more important than actual support quality in nearly every Scorecard survey *Computerworld* conducts. Once again, users said rapid response is essential.

Vendors provide a variety of electronic vehicles to contact support staffs. Electronic mail, fax-back services, Internet forums and Notes servers offer alternatives to waiting in phone queues, and they appear to have a positive effect, especially on DB2 users.

Nearly two-thirds of the DB2 users gave IBM's overall service responsiveness a positive rating, and more than a third of them gave it a very positive rating. "Responsiveness can always be improved, but we have never been left hanging so long that I can say we are disappointed," says Jeffrey Massa, PC field engineer at U.S. Steel Corp. in Gary, Ind.

Oracle users were less pleased. Although nearly a third said responsiveness was good, only 8% could award glowing marks. Part of the reason could be Oracle's three service tiers, says Amy Osetek, an analyst at Dataquest, Inc. in Westboro, Mass. "You pretty much get what you pay for from Oracle. Buy in to their two premium services [Silver and Gold] and get the 24-by-7 coverage most need," she said. The cheaper Bronze plan delivers only six hours by five days.

grow up solid and dependable

No bad choices

Performance is always high on the interest meter, but based on average performance scores alone, it could be tough to choose among the leading Unix RDBMSs

OVERALL PERFORMANCE

Scores are based on a 1-to-5 scale where 5 is very good and 1 is very poor

IBM's DB2/6000	3.8
Informix's OnLine	3.6
Oracle's Oracle7	3.7
Sybase's System 10	3.9

WHAT WE DID . . .

To find out how well the four leading RDBMs are meeting the needs of their customers, Computerworld and First Market Research in Austin, Texas, contacted a minimum of 40 users of each database and asked them to rate their satisfaction in key areas.

The percentages in the charts below represent users who said the performance in each category was good or very good. The remaining majority scored them "average" with an insignificant number rating them poor.

	GOOD	VERY GOOD
IBM	30%	40%
Informix	35%	30%
Oracle	32%	24%
Sybase	28%	28%

	GOOD	VERY GOOD
IBM	18%	33%
Informix	28%	25%
Oracle	44%	18%
Sybase	16%	22%

	GOOD	VERY GOOD
IBM	20%	8%
Informix	23%	10%
Oracle	22%	6%
Sybase	26%	8%

Reliability

Mature products have their advantages, and one is the relative lack of surprises they spring. Users of all four featured databases appear to sleep well at night — IBM DB2 users seem to be resting most peacefully, based on the number of users rating the product "very good."

Similar results are echoed in a coinciding question that asked, "How well does the RDBMS recover from crashes?" Forty-five percent of DB2 users said recovery is either good or very good. "The tools for crash recovery are excellent," one DB2 user says.

One reason Sybase had the most users rating its reliability as merely average could be the stereotypical culture of Sybase users. They are a technically demanding group, Nickerson says, "Sybase users are often very technical and stretch the limits of what Sybase can do with stored procedures and triggers, and they often try to force replication," he says.

The Sybase response base held the highest concentration of financial services firms and computer systems companies, "two demanding industries that expect reliability," Nickerson says.

Operating system compatibility

The ability to run on a variety of server platforms while also accessing most client platforms is key to handling a variety of application scales.

These vendors are also dealing with new and old versions of different Unix flavors circulating throughout the user community.

Sybase had only 38% of its users say operating system compatibility was above average, while the other RDBMSs had more than 50%.

IBM DB2 users were the most evenly split between favorable and less favorable ratings. DB2 had the most users saying operating system compatibility was very good. But aside from Sybase, DB2 had almost as many users who did not give it a favorable rating.

Burden is *Computerworld*'s senior researcher, Firing Line/Scorecard.

Value

Value for the dollar delivered by these RDBMSs is a tricky benefit to measure. Different users perceive value in different ways. Time savings, cost savings, actual performance or a comparison to the cost of alternatives are examples of the measures users say will shape their view of value.

Each vendor had roughly an equal number of users saying their product's value is good or very good. But when compared with the scores in the other categories, value is not the strong suit for any of these products.

Collectively, users for each RDBMS say actual costs were not only very high, but they also believed their chosen database was the most expensive one in the bunch. One Oracle user says, "I think they overcharge a lot. It's more expensive when compared to it's competition." A Sybase user says, "None are cheap, especially this one." Finally, a DB2 user says, "Costs are too damn high! For a small installation, it could be the most expensive choice."

For Informix, value and price are real bright spots. More users say its value and price are very good, and most give it a favorable rating for price. "Costs have been relatively inexpensive, and they have been very open to negotiations," one happy OnLine user says,



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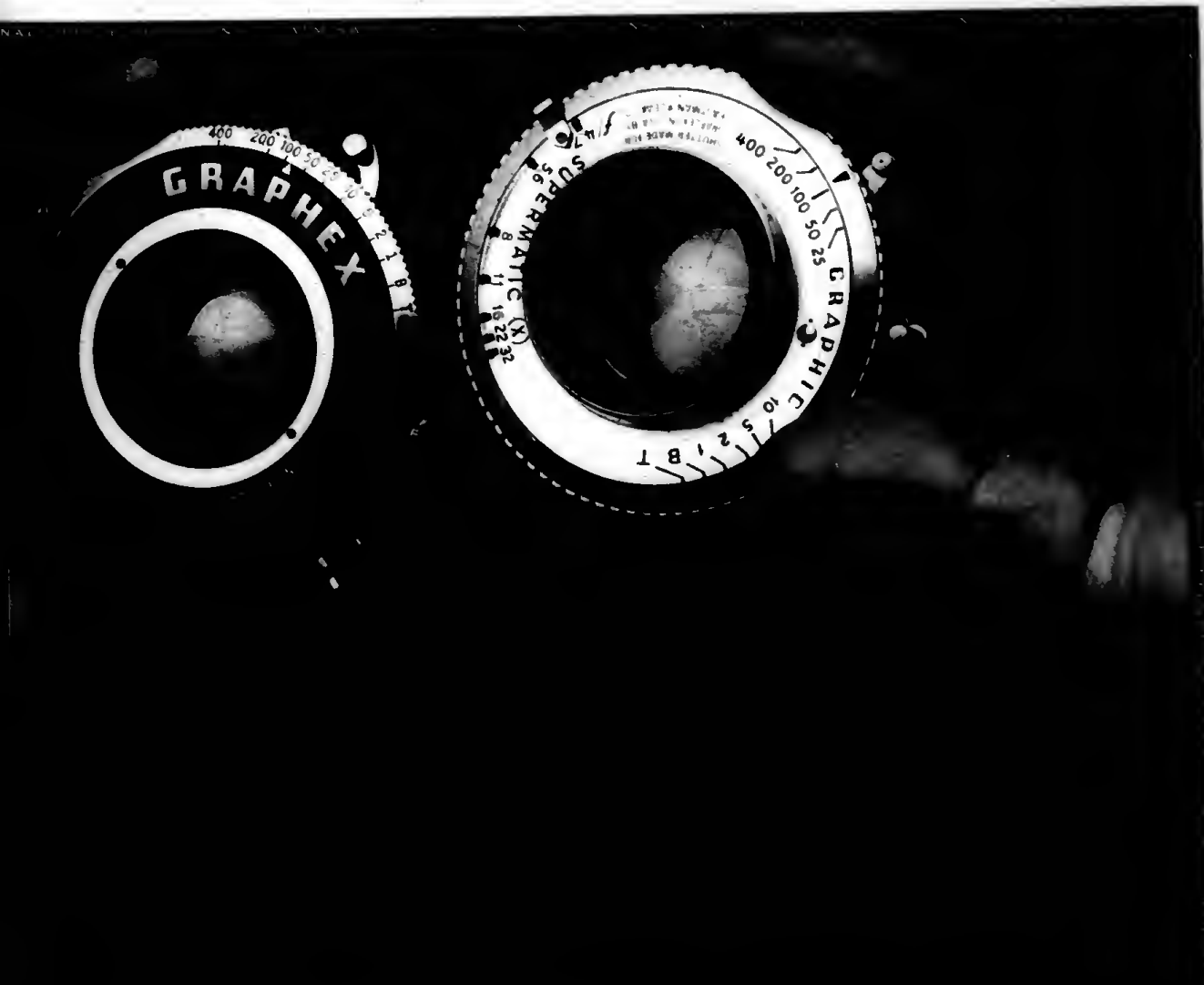
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The Silicon Ceiling

In My View
Anthony Fedanzo

In a recent *Computerworld* study, nearly half of 200 business managers surveyed said they couldn't imagine appointing their IS chiefs to ANY senior business post. That ticks me off.

Most managers of information systems technology are unknowingly involved in a sick relationship with their organizations. We didn't cause it, we can't cure it, and we can't control it.

We buy the idea that "improving our business skills" and going through other self-help techniques are the secret to entering the ranks of senior business management. But such thinking is like that of an abused spouse who believes that learning to cook better or wearing nicer clothing will end the beatings. Self-improvement doesn't work for battered spouses because the problem isn't them. The problem rests with the abusers.

Senior business managers make us feel insecure about our abilities today. Then we make ourselves crazy with self-doubt. No other profession routinely castigates its members as often and as severely for alleged professional inadequacies as does IS. We in IS have bought into



'We in IS have bought into a dangerous myth: If you are in IS, then you cannot be a good business manager.'

Fedanzo is vice president of information systems at Hardin, Associates, an environmental engineering company in Novato, Calif. He can be reached at 415 892 0821

Angel Fresquez

CEOs: Why are you wasting IS talent and money?

a dangerous myth: If you are in IS, then you cannot be a good business manager.

Chief executive officers and other executives routinely presume that experienced professionals from engineering, sales, human resources, finance and administration possess good business sense. However, a similarly experienced IS manager is almost universally presumed to be unprepared (even if the IS manager has an MBA).

A recent *Computerworld* study of CEOs and chief financial officers made senior management's prejudice shockingly clear: 48% of 200 senior business executives said they would not appoint their information technology manager to *any* senior business position (see chart at right).

Face it: Our profession does not enjoy the same kind of acceptance in general business as other professions do. We are suffering a form of prejudice that no amount of self-improvement will change.

If society has learned anything in the past 30 years, it's that you cannot conquer prejudice by educating only the victims.

Any CEO who hires or allows the hiring of an IS manager in a senior position entrusts that person with the literal backbone of the company's success. If the CEO doesn't have confidence that the person can understand basic business concepts and strategies, then it's safe to conclude that he's made a major hiring mistake.

A watchful board of directors would not allow a CEO to retain his job if he hired inept people. So if the hired IS manager is competent, why isn't he sitting in on all the important decisions? It certainly can't be because senior IS managers aren't as competent to listen, think, plan, budget, schedule and execute as their peers in other business units.

It is the CEO's responsibility to end the prejudice against and abuse of IS and its practitioners. CEOs are the ones paid to set the tone and direction for the organization. Until CEOs and boards of directors incorporate IS management into daily executive operations and strategic decision-making, an amount of self-improvement by IS managers is going to give them entree to the inner management circle.

Unfortunately, most CEOs aren't even aware a prejudice problem exists, much less that it needs fixing.

– Anthony Fedanzo

"To what future position would you consider appointing your senior information technology manager?"

2% – CEO
4% – COO
48% – CFO
48% – NONE
14% – DON'T KNOW

Source: 1995 *Computerworld* CEO/CFO survey of 200 senior executives; multiple responses allowed.

The cause

Has this happened to you? You get called into a meeting for a few minutes by your CEO. Senior managers and your peers on the organizational chart are all in attendance. You deliver a brief review or analysis of the relevant IS issues for whatever topic they're discussing and leave with their sincere thanks (and maybe an assignment or two). Sound familiar? Ever wonder why you weren't included in this meeting in the first place?

Although many IS professionals see such encounters as their chance to shine, to me this situation is proof that we are on the outside of senior management regardless of our titles and where we are on the organizational chart. There is only one possible explanation for this tendency to degrade and isolate otherwise competent adults — a fundamental misperception about IS.

People still think of IS as the province of engineers and technicians with little or no general business knowledge. Because people don't understand technology, they get frustrated and angry, and they fear IS. Human nature being what it is, ignorance, fear and anger translate into prejudice. Consequently, corporate leaders neglect and overlook the value of the IS profession and its practitioners, and that is detrimental to the business and can reduce the profitability of the enterprise.

We IS directors, managers or vice presidents have more to offer a company than advice on how much RAM the average PC should have. This situation is tragically ironic because IS and general management both want to do a good job and work as a team.

Results not pretty

The consequences of companies' leaving IS management out of critical day-to-day decisions is measured nationally in billions of dollars wasted through duplicated efforts, inefficiency and lost opportunities.

One company I know of, an East Coast bank, brings this waste home. The bank lost considerable market share because of its inability to deliver services to customers. This occurred because the bank repeatedly ignored the warnings of its IS director that its systems were long overdue for replacement.

This case simply scratches the surface.

If you accept the concept that IS management has an effective role to play in general business management, then it's apparent that this misuse and neglect of talented IS professionals must be the result of some tacit conspiracy between senior management and the IS profession. The rise of more technology-savvy business managers just underscores the importance of IS and the outsider status of IS managers in most companies. It does not necessarily augur good things for our profession.

Even in companies that are highly entrepreneurial, you find this heedless degradation of the IS management role regardless of the position of the IS manager in the corporate hierarchy. Until this changes, don't kid yourself about the value of your contribution. You won't automatically get the same rewards your other business colleagues do. You can "add value," "learn the business" and "get an MBA," but if fundamental perceptions don't change, the prejudice will remain, and we will stay its victims.

Don't take this to mean that learning and understanding what your organization does to make money is a complete waste of time. It is not. But it is also not the magic key to the door to senior management. Worse still, as long as our profession persists in telling us that we are in need of more self-improvement than are our equally educated, experienced and talented colleagues in other fields, this prejudice will continue. We have bought into the myth, and we're helping perpetuate it.

The time has come to end the prejudice. ■

Sanity check

What can you do about this fundamental condition of organizational shortsightedness? Not much, because you aren't in a position to change your organization alone. But you can still do some very important things to keep your sanity:

● Remember that you are already a key person in your organization, even if the organization doesn't recognize it. You don't need to "make yourself more attractive" to be taken seriously. Stop beating yourself up about imaginary inadequacies.

● Dedicate the most people-oriented IS employee you can find to supporting and educating senior business managers on specific technologies such as running word processing, spreadsheet packages and so forth. This helps reduce their fear about the field you manage.

● When speaking with executives, if you're not sure of your facts on a particular topic, keep your mouth shut and your ears and eyes open. Whenever you talk, your brain is on parade; make sure it is wearing the right uniform and is in step before hitting the street. You may have to do some homework on a few subjects, such as federal regulations or liability insurance, but so would anyone else (including the CEO) not trained in those subjects.

● Keep in mind that while many other fields are as young and dynamic as IS, their management professionals do not face the same prejudice. The prejudice against IS is real; most of our profession's alleged inadequacies are not.

– Anthony Fedanzo

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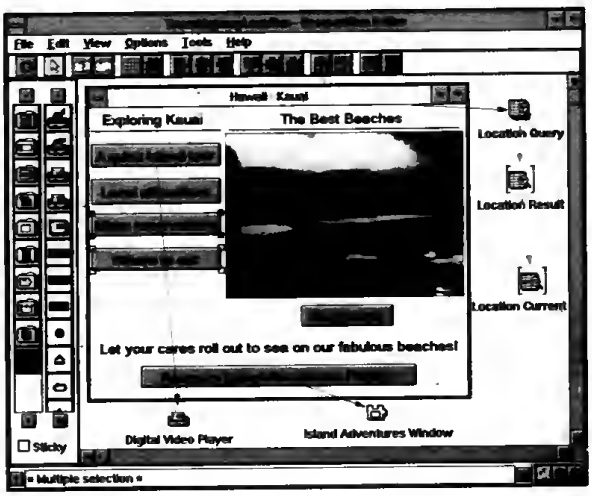
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SAP SAVVY

There's still time to jump on the R/3 bandwagon

By David Jacobson

THERE'S NO TIME LIKE THE PRESENT TO STUDY SAP.

Not since IBM's IMS database hurst onto the scene t0 years ago has a software package generated soch interest. In the past t8 months, the market for SAP America, Inc.'s R/3 client/server tool has spawned an unquenchable demand for specialists who understand this complex technology.

The lucrative opportunity extends to consultants, technical analysts and developers and is likely to continue for at least two or three years, given projected expansion in Fortune 1,000 companies.

"About half of the Fortune 500 companies are either planning to convert to R/3 systems or have already started converting, and there are currently only about 3,000 experienced consultants in the U.S.," says Juergen Sattler, chief executive officer of ICS/Deloitte's U.S operatioos in Chaddsford, Pa., a coosulting firm that offers training in R/3.

Observers oote that on-staff programmers with modest R/3 experieoce can earn npward of $100,000 a year SAP-certified R/3 specialists routinely command a 10% to 25% premium over consultants with comparable experience in other fields, says Frank Montelcone, director of technical and data architecture at Packaging Corp. of America in Evanston, Ill.

There's more good news. While R/3 specialists often possess backgrounds in Unix, networks or databases, nontechnicians with a solid understanding of a specific business process, such as manufacturing or accounting, also have ready access to the field. SAP-certified professionals with two to five years of experience in sales and distribution, manufacturing, operations, management or accouots are suitable candidates for coosulting work.

"The customer will likely have several activities, such as migration and reeogineering, going on at once and will want implementation as quickly as possible. This is why the bnsiness knowiedge is so important," says Ron York, a principal in charge of strategic technology consultiog at Electronic Data Systems Corp. in Piano, Texas. The consulting firm trains clients in implementing R/3 and began its own implementatioo six months ago.

Information systems organizations planning to implement R/3 often discover they need a new methodology, largely because of the dual pressures of a fast-track rollout and the oeed to reorient business operations to accommodate the application's strengths.

"If I were on the technical side, I'd learn objects, client/server and business strategy," *says John Donovan, chairman of Cambridge Technology Group.* **His company expects to hire and train 90 people to become SAP practitioners.**

The fast pace, coupled with the need to grasp how an application can impact the entire enterprise, makes many traditional IS implementation methodologies obsolete.

"Some people view R/3 as an application," says John Donovan, chairman of Cambridge Technology Group, Ioc. in Cambridge, Mass., one of 25 consulting firms that has partnered with SAP to offer training, project management and implementation in R/3. "It's not an application. It's an infrastructure."

Cambridge Technology will offer R/3 seminars to some 10,000 senior managers this year, further whetting demand for practitioners. But the company will hire only 90 practitioners and expects to train all of them from scratch. "If I were on the technical side, I'd learn objects, client/server and business strategy," Donovan says.

BACK TO THE FUTURE

"Ninety percent of users have consultants helping them," says Karl Newkirk, a partner in charge of SAP practice in the Americas at Andersen Consulting in Cleveland, noting that outsourcing is also growing. "Ten percent to 20% of our customers will be outsourcing by next year, but consultants will have no trouble finding work."

While observers predict that supply will soon meet demand, the planned expansion of R/3 to additional platforms and markets should mean that those with expertise won't search long for work. SAP plans to provide support for smaller workstations and possibly lap-

SAP savvy, *page 95*

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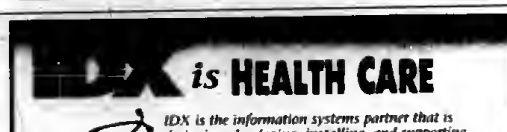
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SAP savvy

CONTINUED FROM PAGE 93

tops later this year, says Alex Ott, vice president of strategic partnerships at SAP in Philadelphia.

"Learning more about business applications and thinking in a more integrated nature will help in any path," Sattler says. "Plus, R/4 will be coming around in the next five years or so."

"Anyone with a good educational background who knows the business processes and who has been in the industry long enough to learn the business or technical skills necessary can come on down," Newkirk says. "We always need another good person." ■

Learn by doing

R/3 spans the enterprise. Its highly integrated structure encompasses thousands of screens, and any changes made in one portion can change or affect others. "The ins and onts of the system are byzantine," says Paul Cubbage, director of client/server software at Dataquest, Inc. in San Jose, Calif. "You at least need the industry knowledge."

Because companies often migrate to a client/server system in the middle of a re-engineering project, an overall business process view and an ability to configure a system are vital to becoming a SAP practitioner.

Many applicants to SAP certification classes have MBAs and are business majors who have limited programming skills but are knowledgeable in their fields and in business process re-engineering. This also means that industry or functional knowledge is the most important prerequisite for a consultant.

How long an R/3 project takes to implement depends on its size and staff resources. Companies often employ consultants until the in-house staff is schooled enough to handle the application.

For example, when Chevron Corp. decided on R/3, it chose one of its 16 companies as a pilot. "We had a custom implementation phase where our staff learned by doing," says Bob Washa, manager of technology for advanced financial IS projects at Chevron in San Ramon, Calif. "The SAP people worked with us for about nine months and afterward were available for questions and as functional experts. By now, we've rolled it through half our companies, and we know as much as the consultants."

Three roads to SAP

All 25 SAP partners offer identical training programs for aspiring R/3 consultants and developers, beginning with instruction in R/3's proprietary language, ABAP/4. These trainers include the Big Six accounting firms, Hewlett-Packard Co., EDS, IBM's financial consulting divisions and several smaller consultancies. Most are hiring a steady flow of instructors who may eventually practice in the field.

To capture SAP's interlocking web of relationships, developers will configure thousands of tables. Learning to apply this technical expertise to a set of business problems is the most challenging part of the training, which usually lasts four to five weeks. SAP's certification supports these professional tracks:

TRACK 1

Application consultant. This person implements and configures a specific R/3 module designed to support a specific business process, such as financial accounting, industry solutions or sales and distribution. The nine modules are so complex that most consultants specialize in only one or two.

TRACK 2

Technical consultant. This person develops the core application using ABAP/4. Many technical consultants have experience in other languages, such as C++ or Cobol. Like an application consultant, the technical consultant is likely to specialize in one or two modules and focus on helping the company adapt to R/3's new core business process.

SAP and its partners offer both consultant courses. The five-week courses include 21 days of hands-on exercises, a four-day case study, in which a model company is built from scratch, and a three-hour test.

TRACK 3

ABAP/4, or Development Workbench. This professional customizes SAP information queries, writes new queries and writes interfaces and extensions to R/3 and other systems. Anyone can attend this four-week course; they do not have to be associated with SAP or its partners or even be a customer.

Most project teams pair two or three new consultants with an experienced project leader as well as users who are learning on the job. After one or two projects, a consultant is generally considered experienced enough to be a veteran. Users with on-the-job experience can take certification tests through SAP without attending class.

For more information, call SAP at (800) 685-1727.

Jacobson is an associate at Corporate Ink, a business communications firm in Newton, Mass. He can be reached at corporateink@mcimail.com.

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Systems Analyst for Software Consulting company Duties include. Design and Develop software tracking system for software applications Includes data feed design data auditing, DBA technical support and direct customer liaison in project launch Software will be designed using ADW and developed using COBOL II To include design of applications using IMS/DC and DB2 on ES/9000 using the following hardware, software and languages IBM 3090 & ES/9000 Teradata DBC 1012, MVS/ESA IMS DB/DC, DB2, SQL CMF DXT, DB2PM, PL/I, TSO, SMP/E IMF, NPS, JCL, REXX and CLISTs Requires a Bachelor's degree in Mechanical Engineering Requires two years experience in the job offered or two years experience as a Software Consultant including experience in the following IMS DB2 Teradata IBM 3090 ES/9000 Salary is $40,000.00 per year Hours are 8.00 am to 5:00 pm forty per week Send resume to 7310 Woodward Room 415 Detroit MI 48202 Ref #120685 Employer paid ad

Systems Analyst for Software Consulting company. Duties include: Design, development, and installation of client server applications using "Screen Scraping" SQL server and MDI gateway Includes design, implementation, and administration of ethernet token ring LANs, WANs (using 3705/207 25/45) Analyzing migration requirements for COBOL II to COBOL/370 installation and support of IBM software products such as MVS/ESA, MVS/XA, VM/SP CICS, SQL/DS, DB2 Includes working on VTAM, NCP NETVIEW IBM 370/390 Assembler, REXX JCLs, RSCS/SNA. Also application development in CICS-COBOL/COBOL II-VSAM-DB2 Stored Procedures and Virtual Basic. Requires a Bachelor's degree in Electrical Engineering. Requires two years experience in the job offered or two years experience as a Software Engineer including the following experience CICS, SQL/DS, DB2, CICS-COBOL, VTAM, and MVS/ESA. Salary is $43,650.00 per year Hours are 8:00 am to 5:00 pm, forty per week. Send resume to 7310 Woodward Room 415 Detroit, MI 48202 Ref #1207 95 Employer paid ad

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Senior System Analyst for Software Consulting firm Duties include Design and development of Object-Oriented (OO) Computer System for clients in Manufacturing, Scientific experiments and education Requires Object-Oriented methodology perform Object Oriented analysis and- Object-Oriented Design Design data structures and GUI Utilize client-server technology or real-time system and database Also develop system in Smalltalk/Visualworks and provide consultation on Smalltalk programming of users and computer science scientific applications such as computational analysis of welds Requires a Ph D in Mechanical Engineering to include classes or project to basis on the following Computational Analysis of Welds Requires two years experience in the job offered or two years experience as a Systems Analyst to include experience in Smalltalk and Object-Oriented Computer Systems Salary is $60000.00 per year Hours are 8:00 am to 5:00 pm, forty per week Send resume to 7310 Woodward, Room 415 Detroit MI 48202 Ref #90695 Employer paid ad

Sys Analyst analyze business needs & deliver KBS solutions using AI & AION sys dvlpmt s/w perfm internal consulting focused on dsgn dvlpmt installation & support of knowleg based sys satsfy needs of user dept using Client Server technique & Visual C++ Req MS in Computer Sc.; 8 mo. exp. in using Client Server tech, Novell netwk, C++, AION Object-Oriented methodlg for AI, SQL & DBMS 40hr/wk 8-5pm $37,555/yr Employer paid ad Send resumes to 7310 Woodward Ave Rm 415, Detroit MI 48202 Ref No. 126995

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Software Engineer to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions or meet needs, analyze design develop & implement computer software for clients EDP systems, analyze design develop & test software libraries with embedded RS232/485 serial communication device driver for automated printer control panel testing tool Serial Control Panel Interface (SCPI) on HP UXC & DOS environment on MS-Windows Library forms software component & will be developed on HP9000 Series 700/800 & HP Vectra XP/60 using C/C++ & ANSI coding standards, meet with users to gather requirements, design & develop project life cycle documents, conduct code review & inspections conduct technical training & provide technical support to end-user/ Reqs Bach in Comp Sci Computer, Electrical or Electronics & Communications Engg., or equiv. in ed & exp. 2 yrs exp. in job offered or 2 yrs. related exp such as Systems Analyst, Programmer or Software Engineer Will accept 3 yrs college ed plus 3 yrs exp or job offered or related exp in lieu of reqs ed & exp Related exp must include structured systems analysis & design, white box testing techniques developing software tool libraries & defining user interface & using Borland C++ HP UXC HP9000 ANSI-C 80X86 assembly languages $51,500/yr 40 hrs/wk 8a-5p

Programmer Analyst to consult with clients to ascertain & define their business requirements in problem areas & utilize technical expertise to provide solutions to client needs, analyze design develop & implement computer software for clients EDP systems, write programs in COBOL 74 for converting data from DMSII database to Sybase database, write stored procedures on Sybase for generating reports based on data converted from Unisys based and, fgt for analysis, design & development of integrated financial package for large financial institutions using multiple databases, system fine-tuning, administration of production database, using Unisys A series mainframe DMS II COBOL 74 ERGO SDF CANDE SYBASE & file transfer utilities Reqs Bach in Comp Sci Computer Information Systems, Computer or Electrical Engg., Systems Analysis Business Administration or equiv 2 yrs exp in job offered or 2 yrs related exp such as Programmer Systems Analyst, Software Engineer Consultant, Programmer Analyst or EDP Officer Will accept 3 yrs college ed. plus 3 yrs exp or job offered or related exp in lieu of reqs ed & exp Related exp must include analyzing, designing, & testing using COBOL 74, DMSII ERGO LINC & Unisys mainframe $40 650/yr 40 hrs/wk 8a-5p

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Send a cover letter, resume, names and phone numbers of three professional references, and college transcripts to:

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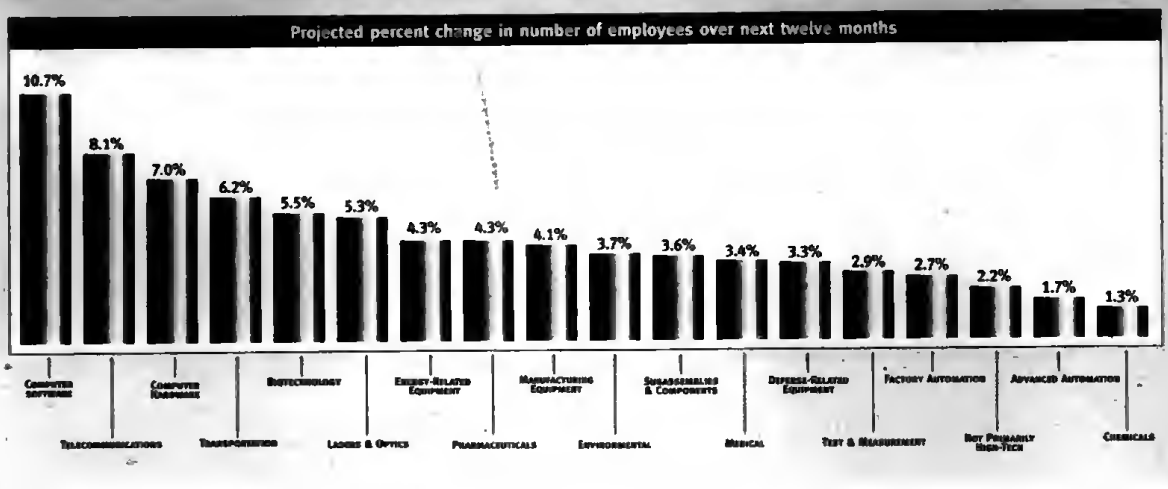
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TECHNOLOGY ROUND-UP

Data movers

Warehousing gives data transfer tools a new role

By Alan Radding

If there is a technology to thank for the renewed interest in bulk data transfer tools, it's data warehousing. Also known as high-speed file transfer products, bulk transfer tools specialize in automating the movement of files securely, reliably and quickly between platforms.

At a minimum, the tools provide a measure of conversion between platforms such as EBCDIC to ASCII. They also generate acknowledgments to ensure files arrive at their intended destination.

Bulk transfer tools have long been used in industries with large-scale, mainframe-based data transfer needs such as banking, says Paul Mason, research manager for enterprise systems management at International Data Corp. (IDC) in Framingham, Mass. But with the arrival of data warehousing, a broad range of companies suddenly needed this capability.

"As users build bigger data warehouses and have to update them with increased frequency, there is a smaller window of time in which to get the transfers done," says Wayne Eckerson, a senior consultant at Patricia Seybold Group in Boston.

In the meantime, users have typically relied on the IND$ facility, a file transfer command on the IBM mainframe, or file transfer protocol (FTP) in Unix to write their own file transfer programs. Rolling your own is cheaper but far from an easy solution. "You end up having to write your own shipping utility for each platform," says Joseph Ferolano, electronic commerce service owner at Cigna Corp. in Philadelphia.

Solutions such as FTP have other drawbacks. For example, not every platform supports TCP/IP. Nor do FTP transfers provide end-to-end checking the way bulk transfer tools do.

On the surface, database replication tools appear to provide bulk data transfer — but "database replication and bulk file transfer are two different applications," Eckerson says.

For example, database replication transfers only the changes made in one database to a copy of that database. Trinzic Corp. (InfoPump) and most of the major relational database management systems vendors provide data replication facilities.

Similarly, data access middleware or message-oriented middleware move data between host systems and target platforms. They support ad hoc querying but are not intended for high-speed, high-volume file transfer.

At this point, the bulk data transfer market is small, with three primary players (see chart).

The newest products promise to perform more sophisticated operations. For example, some tools not only transfer a database file to the target platform but will actually load the data into the database. Vendors are also implementing broader multiplatform and multiprotocol support and making the tools bidirectional.

Pricing remains a barrier, however. The tools are costly, making them feasible only for organizations absolutely requiring the speed, reliability and security that only they deliver. "You're talking about mainframe prices," says Mario Kosanovich, a research analyst at Meta Group, Inc. in Reston, Va.

However, as the data warehousing trend brings more buyers into the market, prices should decline. "The vendors are finding price resistance when they come down to the server and the LAN. They are struggling with pricing issues now," Mason says.

The market is in a state of upheaval as the vendors jockey for position. Platinum Technology, Inc. bought Trinzic and added InfoPump, a data access middleware tool, to its Data Transport as part of a strategy to provide a complete warehouse tool set. Computer Associates International, Inc. recently announced plans to purchase Legent Corp. Presumably, the tools will be placed under the CA-Unicenter umbrella, but the company has not commented on its plans. ■

Radding is a freelance writer in Newton, Mass.

Pricing barrier

Proprietary bulk transfer tools are costly, but analysts predict prices will decline. "The vendors are finding price resistance when they come down to the server and the LAN. They are struggling with pricing issues now," says Paul Mason at IDC.

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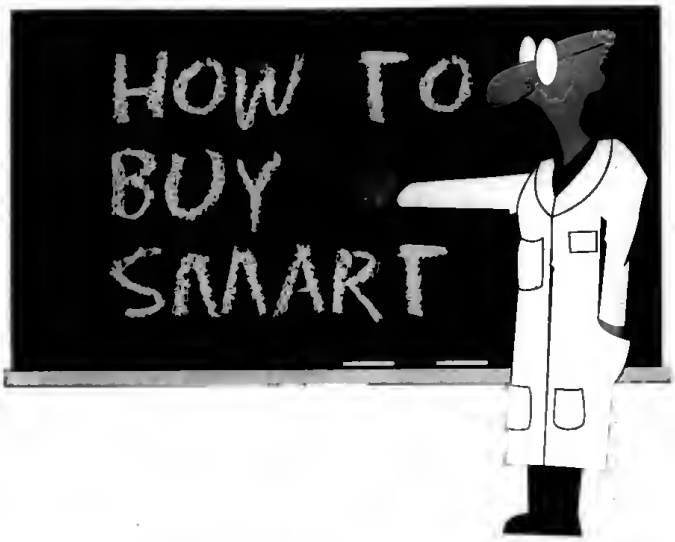
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Sales Offices

Associate Publisher/Vice-President/Sales
David Peterson
Computerworld Headquarters: 375 Cochituate Road, P.O. Box 9171, Framingham, MA 01701-9171 Phone: 508-879-0700, FAX: 508-879-0446

New England
Regional Vice President: Sherry Driscoll; Senior District Managers: Bill Cadigan, John Watts; Sales Office Coordinator: Tammy Grymowicz; Sales Assistants: Laura Holliday, Barbara Shuman; 470 Totten Pond Rd., 5th Floor, Waltham, MA 02154 (508) 879-0700 FAX: (617) 890-2600 TDD: (800) 428-9244

Mid-Atlantic
Senior District Managers: Fred Lobaglio, Vicki Gonin, Rob Molden; Sales Assistants: Susan Kissane, Jean Dellagrotta; Mack Center I, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 FAX: (201) 712-9786 TDD (800) 208-0295

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Regional Vice President: Bernie Hockenmeier; Sales Assistant: Jennifer Pattenaude; 3675 Crestwood Parkway, Suite 430, Duluth, GA 30136 (404) 931-8100 FAX: (404) 931-8106 TDD: (800) 449-4074

Midwest
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Southwest
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Advertising Operations
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Boston: Vice President, Larry Levesque; Director of Publishing Services: Carolyn Medeiros; Project Coordinator: Brenda Brouillet; Managing Editor: Peter Bochner; Graphic Designer: Gail Varney, 375 Cochituate Road, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 FAX: (508) 879-0446
San Francisco: West Coast Director: Elaine R. Offenbach; Sales Associate: Nikki Wilson; 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555 FAX: (415) 347-8012

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Gainers

Percent

Sequoia System Inc.(H)	71.4
Wall Data Inc.	43.3
Printronix Inc.(H)	37.6
Convex Computer	36.3
Computervision Corp.(H)	28.3
Pinnacle Micro Inc.	27.7
PageMaker Systems Inc.	27.3
Bolt, Beranek & Newman(H)	25.4

Dollar

Texas Instruments(H)	14.25
Raychem(H)	10.38
Printronix Inc.(H)	10.25
Intuit Inc.	9.25
Intel Corp.(H)	7.13
Microsoft Corp.(H)	2.13
Bolt, Beranek & Newman(H)	2.01
Wall Data Inc.	6.50

Losers

Percent

Maxtor Corp.	-33.3
Viasoft Software Inc.	-26.5
Tandem Computers Inc.	-22.6
Compuware Corp.(L)	-21.3
Xetron Corp.	-21.3
Group 1 Software(H)	-18.4
QMS Inc.(L)	-18.4
4th Dimension	-16.4

Dollar

Maxtor Corp.	-12.25
Compuware Corp.(L)	-4.38
BMC Software Inc.(H)	-5.69
Viasoft Software Inc.	-5.37
ITT Corp.(H)	-5.00
Xerox Corp.	-4.38
US Robotics(H)	-4.50
Group 1 Software(H)	-4.38

Paper chase

Paper covers rock; scissors cut paper. Or is it electronic imaging cuts paper?

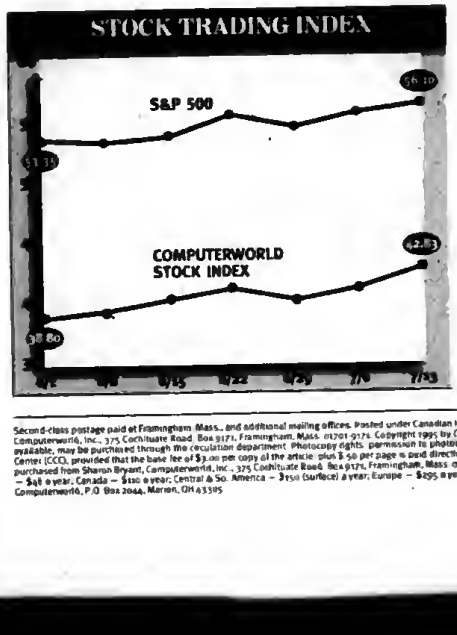
Companies such as market leaders **FileNet Corp. (FILE)** and **Wang Laboratories, Inc. (WANG)** are helping paper-intensive businesses trim their stacks of wood pulp. Even though paper companies have surged on Wall Street recently, imaging is still a growing market.

For example, FileNet has come through a "major transition," according to Robert Johnson, an analyst at The Chicago Corp. in Chicago. The Costa Mesa, Calif., company currently trades near its high of 42¼.

"December of 1992 was their low point, with lots of layoffs. Since then, they've been on an unbelievable roll," Johnson said. "FileNet has done a great job of transitioning to open systems and working with partners like Hewlett-Packard Co. to grow sales."

Cornerstone Imaging, Inc. (CRNR) saw its earnings per share drop from 25 cents at the end of last year to 17 cents for the first quarter of this year, thanks to a revamping of its display controller line. But the San Jose, Calif., company will diversify by year's end with new image processing software.

Some companies are joining forces to stay in the game. **Recognition International, Inc. (REC)** brings its check and sales draft imaging systems into a merger with **Banctec Technologies Corp.** And **Excalibur Technologies Corp. (EXCA)** is joining up with ConQuest Software, Inc., which will help add natural language search capabilities to its EPS imaging software. *—Stewart Deck and Tim Ouellette*



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				3 PM	Change
Computer Systems					
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NYS	47.25	38.00	AMERITECH Corp.	45.38	-0.74
NYS	55.88	47.75	AT&T	53.88	-0.49
OTC	59.50	7.38	Ascend Communications (H)	59.50	2.25
NYS	19.75	10.50	Banyan Systems Inc. (L)	12.88	0.56
OTC	45.38	18.63	Bay Networks Inc. (H)	42.00	2.63
NYS	38.88	28.38	Bell Atlantic Corp.	38.00	-1.13
NYS	64.75	30.50	Bellsouth Corp. (H)	62.38	1.63
NYS	34.75	10.00	Bolt, Beranek & Newman (H)	34.63	7.01
OTC	19.25	8.00	Broadcast Technology	16.75	0.38
NYS	58.88	37.38	Cabletron Systems (H)	38.88	1.38
OTC	27.25	10.00	Centigram Communications	14.25	0.00
OTC	50.38	20.00	Chipcom Corp	23.75	1.50
OTC	38.25	10.38	Cisco Systems Inc. (H)	38.25	3.31
OTC	12.13	6.13	Compression Labs Inc.	11.00	1.38
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OTC	51.88	23.00	DSC Communications (H)	31.13	0.51
OTC	41.75	14.13	FORE Systems Inc.	35.25	2.75
NYS	25.88	9.75	General Datacomm Inds.	12.13	0.38
NYS	35.50	29.50	GTE Corp. (H)	34.88	-0.12
NYS	120.13	77.00	ITT Corp. (H)	115.13	-5.00
OTC	75.88	17.25	MCI Communications Corp	22.25	-0.75
OTC	15.75	5.50	Micom Communications Corp.	7.00	-0.44
OTC	17.13	6.25	Microcom Inc.	17.13	1.63
OTC	30.50	4.00	Network Corp	3.13	-1.37
OTC	50.25	3.25	Network Computing Devices (H)	9.75	3.13
NYS	27.88	9.00	Network Equipment Tech	26.88	1.13
NYS	30.63	14.75	Network General	28.75	0.38
NYS	43.63	26.50	Newbridge Networks Corp	34.13	-0.37
NYS	41.00	30.00	Northern Telecom Ltd.	37.75	3.13
OTC	23.25	13.38	Novell Inc.	23.13	2.00
NYS	43.13	35.63	Nynex Corp	40.38	-0.24
OTC	38.00	17.75	Octel Communications Corp. (H)	34.00	6.00
OTC	31.00	7.00	Optical Data Systems Inc. (H)	30.75	0.75
OTC	6.00	3.13	Pennel Data Comm Networks	5.44	0.19
OTC	55.63	31.75	Picturetel Corp. (H)	39.63	3.76
OTC	8.13	2.13	Proteon Inc.	7.38	0.63
OTC	7.88	3.75	Racotek Inc. (H)	7.69	1.19
OTC	6.75	3.50	Retix	3.94	0.06
NYS	24.88	16.75	Scientific Atlanta Inc.	22.75	-0.25
NYS	47.88	39.75	Southwestern Bell Corp	46.38	-0.49
NYS	40.13	25.88	Sprint Corp	36.00	0.35
OTC	31.63	12.50	Standard Microsystems Corp.	18.75	3.75
OTC	56.75	33.75	Stratacom Inc. (H)	55.63	0.13
OTC	8.13	3.63	Telebit Corp	4.81	0.87
OTC	127.75	25.00	US Robotics (H)	41.75	1.00
NYS	42.88	34.63	US West Inc.	40.75	0.27
OTC	33.50	9.00	Xircom	33.00	5.75
OTC	33.00	8.00	Xylogics Inc. (H)	33.00	5.75
Personal Computers					
OTC	6.88	3.63	Advanced Logic Research	6.63	0.38
OTC	30.94	26.38	Apple Computer Inc.	28.38	0.76
OTC	10.75	10.50	AST Research Inc.	10.50	-1.06
NYS	68.25	29.50	Compaq Computer Corp. (H)	68.25	0.63
OTC	68.00	24.88	Dell Computer Corp. (H)	68.00	3.25
OTC	75.25	11.75	Gateway 2000 Inc.	22.75	-0.88
NYS	82.75	36.88	Hewlett-Packard Co. (H)	82.75	3.00
OTC	20.13	2.75	Micron International Inc.	18.88	0.87
NYS	45.50	21.25	Silicon Graphics (H)	44.38	0.88
NYS	41.50	20.88	Sun Microsystems Inc. (H)	40.75	-2.13
NYS	33.13	24.38	Tandy Corp. (H)	26.38	1.75
Peripherals					
ASE	13.63	5.75	Amdahl Corp.	11.50	-0.34
NYS	8.88	3.63	Convex Computer	6.13	1.63
OTC	0.22	0.16	Cray Computer	0.19	0.03
NYS	29.25	24.63	Cray Research Inc. (H)	27.00	-0.75
NYS	12.00	6.75	Data General Corp.	9.00	-0.75
NYS	49.50	38.50	Digital Equipment Corp	39.50	-0.25
OTC	5.50	1.06	Encore Computer Corp	1.23	-0.09
OTC	18.50	6.50	Harris Computer Systems Corp	11.63	0.24
NYS	103.75	54.38	IBM (H)	103.75	3.75
OTC	7.88	3.00	Meridian Data Inc.	5.75	0.00
OTC	12.75	4.25	Netframe	3.63	0.38
OTC	21.75	11.75	Sequent Computer Sys	19.38	0.69
OTC	9.00	3.13	Sequoia Systems Inc. (H)	9.00	3.75
NYS	39.88	25.75	Stratus Computer Inc.	31.88	-0.87
NYS	19.75	11.63	Tandem Computers Inc.	13.13	-3.88
OTC	7.63	3.38	TriCord Systems (L)	3.75	0.75
NYS	12.12	9.23	Unisys Corp.	10.38	-0.49
Software					
OTC	66.50	27.75	Adobe Systems Inc.	58.38	1.25
OTC	5.88	2.50	American Software Inc.	5.63	0.38
OTC	30.75	9.88	Apple Inc.	25.50	1.63
OTC	47.75	24.63	Autodesk Inc. (H)	47.75	2.75
OTC	7.88	1.75	Bachman Info. Systems	7.13	0.00
OTC	34.00	32.00	BGS Systems Inc. (H)	32.75	0.13
OTC	83.75	40.25	BMC Software Inc. (H)	75.06	-3.69
OTC	31.25	16.81	Boole & Babbage	28.25	0.75
OTC	14.38	6.00	Borland Int'l, Inc.	11.44	-1.06
OTC	11.75	5.75	Brodx Control Systems Inc.	9.50	0.00
OTC	3.75	1.78	CE Software	2.44	-0.06
ASE	20.13	7.75	Cheyenne Software Inc. (H)	18.50	-0.50
OTC	12.13	9.75	Cognos Inc.	29.13	-0.25
NYS	74.63	37.50	Computer Associates (H)	73.75	7.00
NYS	8.38	2.50	Computervision Corp. (H)	8.50	1.88
OTC	49.25	21.75	Compuware Corp. (L)	26.25	-6.50
OTC	26.63	9.00	Consensus Inc. (H)	26.50	4.77
OTC	20.38	10.13	Corel Corp. (H)	19.63	0.13
OTC	16.25	7.38	Datawave Technologies Inc.	14.75	1.13
OTC	43.75	37.75	Filenet Corp. (H)	43.75	3.50
OTC	6.75	3.00	4th Dimension	3.25	-1.13
OTC	31.75	9.50	Frame Technology	29.38	1.75
OTC	35.38	31.50	FTP Software Inc.	28.31	1.94
OTC	34.00	7.23	Group 1 Software (H)	20.00	-4.50
OTC	14.50	8.25	Gupta	9.75	-0.13
OTC	31.75	4.63	Hogan Systems Inc.	30.13	0.24
OTC	31.50	23.00	Interactive Software Eng. Corp. (H)	30.75	1.75
OTC	18.63	11.25	Information Resources	14.00	0.50
OTC	10.38	8.94	Informix Corp. (H)	10.19	1.07
OTC	14.50	7.50	Intergraph Corp.	11.00	-0.56
OTC	9.75	2.38	Interleaf Inc. (H)	9.13	1.76
OTC	23.75	10.00	Interlock Inc. (H)	24.38	-0.33
OTC	87.00	34.75	Intuit Inc.	87.00	9.25
OTC	47.00	20.75	Legent Corp.	43.50	1.62
OTC	11.38	3.63	Magic Software Enterprises	9.50	1.63

Exch	52-Week Range			$ or ▲ to Wk Net	Wk Pct
				3 PM	Change
OTC	16.30	6.75	Manugistics Group Inc. (H)	15.75	0.13
OTC	60.00	14.75	Mapinfo Corp.	24.38	12.25
OTC	6.38	1.66	MathSoft	4.00	0.75
OTC	35.75	7.38	McAfee Associates	32.75	3.75
OTC	18.00	9.38	Meridian Graphics (H)	10.13	0.13
OTC	16.53	10.75	Micro Focus	11.38	-0.88
OTC	9.75	4.63	Microdyne Inc.	8.00	-0.50
OTC	102.75	47.75	Microsoft Corp. (H)	107.75	7.13
OTC	32.50	3.63	NetManage Inc.	30.81	3.38
OTC	61.50	23.66	Oracle Corp. (H)	60.50	0.50
OTC	53.75	23.75	Parametric Technology (H)	52.25	2.13
OTC	24.25	7.88	Peer Place Systems Inc.	10.38	3.75
OTC	60.38	15.75	People Soft (H)	60.38	1.25
OTC	12.13	4.38	Phoenix Technologies	12.13	0.38
OTC	34.88	3.38	Platinum Software	15.75	0.00
OTC	25.75	15.38	Platinum Technology	18.88	0.75
OTC	58.38	29.38	Progress Software Corp.	54.63	1.51
OTC	13.00	1.88	Quarterdeck Corp.	11.13	0.50
OTC	25.13	9.38	Ramtron Technologies Inc.	25.00	1.13
OTC	2.75	2.00	Rasterops (H)	2.13	0.88
OTC	6.13	2.88	Ross Systems	5.75	0.38
OTC	12.00	0.38	Saphena Int'l. Corp. B.V.	3.00	0.00
OTC	35.63	31.50	Softkey International Inc. (H)	50.88	3.51
OTC	6.25	3.88	Software Publishing Corp.	3.50	-0.27
OTC	12.88	5.25	State of the Art	6.00	-0.99
NYS	61.88	25.00	Sterling Software Inc. (H)	61.00	0.88
OTC	15.00	3.63	Structr. Dynamics Research	11.75	0.00
OTC	55.88	19.88	Sybase Inc.	30.75	-1.75
OTC	50.00	31.13	Symantec Corp.	34.25	-0.75
OTC	64.25	24.75	SynOptics (H)	63.13	0.50
OTC	30.00	10.63	System Software Assoc.	21.38	-0.50
OTC	18.13	5.50	Systemsoft Corp. (H)	10.50	1.13
OTC	7.75	3.75	Triangle Corp.	6.75	0.75
OTC	24.00	7.88	Worldgate Systems	12.25	0.88
OTC	22.00	10.75	Wrams Software Inc.	14.88	-1.37
OTC	11.75	4.63	Walker Interactive Systems	6.38	0.38
OTC	55.38	15.00	Wall Data Inc.	21.50	6.50
OTC	18.25	9.13	Wang Laboratories Inc.	16.63	-0.13
Semiconductors					
NYS	39.75	22.25	Advanced Micro Devices	34.75	1.25
NYS	37.88	16.66	Analog Devices Inc. (H)	30.38	0.88
OTC	66.38	21.88	Atmel Corp. (H)	65.50	3.63
OTC	14.88	3.63	Chips and Technologies	14.13	0.63
OTC	70.50	21.00	Cirrus Logic (H)	70.75	3.63
NYS	49.13	15.00	Cypress Semiconductor Corp. (H)	40.13	3.13
NYS	22.50	15.38	Dallas Semiconductor	20.63	-0.87
OTC	64.75	19.38	Integrated Silicon Systems (H)	64.75	5.50
OTC	74.75	28.00	Intel Corp. (H)	74.75	7.13
NYS	68.88	11.81	LSI Logic Corp. (H)	68.00	1.13
OTC	41.13	13.50	Lattice Semiconductor (H)	40.88	3.88
NYS	61.75	35.25	Micron Technology (H)	61.75	5.25
NYS	76.00	47.88	Motorola Inc. (H)	76.00	5.50
NYS	31.13	16.50	National Semiconductor (H)	30.13	1.75
OTC	36.38	8.63	Sierra Semiconductor (H)	34.50	2.63
NYS	155.00	61.38	Texas Instruments (H)	155.38	14.25
OTC	33.63	14.75	VLSI Technology (H)	31.63	0.00
OTC	5.75	1.78	Weitek	4.38	-0.37
ASE	21.75	13.13	Western Digital Corp.	18.50	0.13
OTC	114.63	32.00	Xilinx (H)	114.63	10.38
OTC	64.13	24.75	Zilog Inc. (H)	67.88	-1.12
Miscellaneous					
OTC	25.88	14.38	American Power Conversion	25.38	1.25
OTC	40.12	16.75	Apantec Inc. (H)	39.88	0.78
OTC	37.25	16.75	Banctec Inc.	16.73	1.00
OTC	12.00	5.38	Cambex Corp.	10.00	1.63
ASE	4.75	1.38	Cognitronics Corp.	3.31	0.19
NYS	14.61	9.00	Comdisco Properties (H)	10.00	0.75
OTC	24.00	7.38	Creative Technologies Inc.	8.13	0.57
OTC	13.13	3.38	Data Race Inc.	11.25	-0.13
ASE	7.61	4.25	Datakeen Corp.	6.75	0.75
NYS	27.25	24.00	DMC Corp. (H)	26.88	1.00
OTC	22.75	7.00	Exabyte Corp. (H)	27.25	1.13
OTC	17.75	11.75	Expeda & Sutherland	13.75	0.00
OTC	24.00	11.75	Exabyte	16.00	0.63
OTC	9.63	1.88	Intelligent Info Systems	3.06	0.31
OTC	26.13	1.78	Interco Corp.	23.50	-0.50
OTC	6.75	2.00	IPL Systems Inc.	3.75	-0.38
OTC	60.12	19.38	Komag Inc. (H)	60.13	3.81
OTC	7.75	2.63	Maxtor Corp.	5.63	-0.12
OTC	11.50	4.00	Micropolis Corp.	6.25	1.00
OTC	16.75	8.75	Pinnacle Micro Inc.	13.88	3.13
OTC	32.50	7.81	Printronix Inc. (H)	37.50	10.25
NYS	50.75	4.88	QMS Inc. (L)	4.38	-0.87
OTC	26.63	13.00	Quantum Corp.	25.75	1.32
OTC	15.00	7.38	Radius Inc.	12.50	0.00
NYS	9.75	6.38	Recognition International	9.13	0.75
OTC	7.00	3.61	Reuters Inc.	3.25	-0.63
OTC	45.25	21.38	Seagate Technology (H)	44.63	2.19
NYS	39.13	17.88	Storage Technology	26.13	-0.75
NYS	12.50	10.13	Tektronix Inc. (H)	10.50	1.12
NYS	129.88	90.63	Xerox Corp.	120.38	-4.50
Services					
OTC	22.00	14.31	American Mgmt. Systems (H)	21.75	2.88
NYS	3.38	0.56	Analogic Corp.	0.88	0.01
OTC	28.00	14.50	Analysts Int'l. (H)	17.25	0.50
OTC	66.00	50.75	Auto Data Processing	64.75	0.38
OTC	34.75	14.00	Cambridge Tech. Partners	31.00	0.00
NYS	39.00	23.50	Ceridian Corp. (H)	38.00	0.88
NYS	31.63	18.13	Comdisco Inc.	30.62	0.88
OTC	18.50	6.38	Computer Horizons (H)	17.63	-0.37
NYS	57.75	50.75	Computer Sciences	35.75	-3.13
NYS	15.00	2.38	Computer Task Group	14.00	-0.88
NYS	54.00	6.75	CompuUSA Inc. (H)	54.50	3.50
OTC	10.75	5.38	Control Data Systems Inc.	9.00	-0.13
OTC	14.75	6.13	Enginad Desc Oper Software	13.88	-1.38
NYS	44.75	33.00	General Motors E (ESL) (H)	44.75	1.00
OTC	14.63	6.88	Imacon Corp. (H)	13.75	0.88
OTC	18.13	7.50	Intelligent Electronics	13.50	-0.94
OTC	21.25	3.88	Medisys	7.69	-0.43
OTC	15.88	8.50	Microtage Inc.	14.38	-0.10
OTC	39.38	30.81	Paychex (H)	39.88	-0.75
NYS	31.63	32.25	Policy Management Sys.	30.00	1.88
NYS	32.75	22.25	Reynolds and Reynolds (H)	32.38	1.01
OTC	24.38	16.75	SEI Corp. (H)	23.50	-0.63
OTC	62.50	23.13	Shared Medical Systems (H)	41.00	-0.38
OTC	8.00	4.00	SHL Systemhouse	7.61	0.00
OTC	75.00	11.75	Software Spectrum Inc. (H)	75.00	6.75
OTC	30.00	24.38	Sungard Data Systems (H)	28.50	0.50

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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AT&T targets

CONTINUED FROM COVER 1

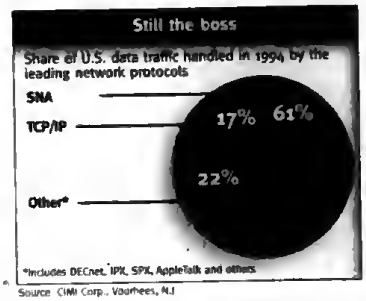
could cost about $23,500, said Christine Heckart, director of broadband consulting at TeleChoice, Inc., a Veroea, N.J., consultancy.

Users said pricing will make or break the SNA over frame-relay service. "If AT&T can show cost savings, SNA users will move to the service," said John Lee, director of electronic commerce at Falcon Microsystems Corp in Landover, Md

AT&T would eot speculate on how it will price such a service, however.

"We've beard from lots of users who are looking for this kind of [package]," said Jim Lamh, AT&T's Accuwan product manager, who confirmed the late fall announcement. Accuwan is an AT&T service that links LANs for users

Analysts who track frame relay said an SNA eetwork over frame-relay service could be a market success.



SNA, or Systems Network Architecture, is an old IBM computer network architecture upoe which the majority of mission-critical software applications still run. Users have long run SNA traffic over low-speed, expensive poiet-to-point and multidrop private lines.

"There is a very definite user eeed for this type of service in the industry today," Heckart said. "But that can be a major problem or e major opportunity, depending on your perspective."

To succeed with this type of service, the carrier needs to gain expertise with SNA environmeets and "make their expert resources available to BNA users to develop the migration strategies and solve problems if they arise," she added.

."It would be the next evolutionary step for our frame-relay service," said Tom Noone, product manager for AT&T's interSpan Frame Relay Service. "And 10% to 15% of our frame-relay users are interested in this to the point where some are putting their [SNA] networks out to bid now."

More demanding apps

But while frame relay has been a huge hit for bursty electronic mail and linking LANs, the more demanding, mission-critical SNA applications require safeguards to eliminate lost data and session time-outs.

"SNA shops are used to predictable performance and reliability of their private-line networks, and it would initially be hard to move to frame relay," Lee said. "AT&T's going to have to do one hell of a sales job to get users from vertical markets like banking to move."

These users would want more from AT&T than frame-relay connections The carrier would need to strike deals with networking equipment vendors so it could offer the access gear needed for user sites, for instance.

AT&T would likely offer the service nationwide because frame relay is offered through more than 300 network entry points in the U.S. It would support 56K bit/sec. to 1.544M bit/sec. access lines to those points.

Ie addition to equipment, AT&T would also offer network monitoring and manageeet services as it does today for Accuwan. "The service would have a very similar structure," Lamh said.

IBM/Lotus

CONTINUED FROM COVER 1

desktop — SmartSuite," according to a source within Lotus. Weiler also said IBM/Lotus would continue to explore ways te use StarOivision's object technology in future products but that no decisions had been made yet on exactly how the technology would be used.

A Lotus spokeswoman separately confirmed that the memo had been issued.

Users and analysts said the clarification by IBM was overdue.

"It's about time. This will stem defections from SmartSuite. Lotus has seee a drop-off in suite sales because users were concerned IBM would not back it," said Matt Cain, an aealyst at Meta Group, Inc. in Stamford, Conn. "I know of two cases where large corporations dropped SmartSeite and went to Microsoft Office because of the concern."

"IBM messed up by not stating this flat out sooner .. that they were buying Lotus for SmartSuite and Notes," said Gene Barrett, director of information systems at Shaw, Pittman, Potts & Trowbridge, a Washington law firm. "It left a vacuum in the market. There was uncomfortable, confused publicity from the StarOffice people. But this [statement from IBM] solidifies our commitmeet to Notes and SmartSuite."

While the StarOffice and emerging IBM Office offerings were potential desktop strategies for IBM prior to the Lotus acquisition, according to a source close to IBM, once the deal was consummated, IBM faced pressure to back the Lotus suite.

Additionally, an IBM spokeswoman said the company intends to follow through on a commitment made last month [CW, June 12] by IBM Chairman and Chief Executive Officer Louis Gerstner in a letter to Lotus CEO Jim Manzi. Gerstner said Lotus would retain its autonomy under the merger and take primary responsibility for its software products.

"We are thrilled with the confirmation that SmartSuite is the key player in the IBM Office suite strategy. We are committed to the integrated desktop, which includes Notes and SmartSuite and the power of that tool set for our organization," said Donna Darr, project leader for the implementation of Notes and SmartSuite at Hewitt Associates, a compensation and benefits consultancy in Lincolnshire, Ill., with 4,000 Notes users.

Still up in the air are IBM's object technology plans. Cain said he thought most of the object technology for future IBM/Lotus products would likely come from SmartSuite because that is what the installed base knows best.

Lotus watchers have said the company is looking into ways to render applications into a series of objects within Notes. Bet Cain noted that IBM's support of the OpenDoc object standard will have to be reconciled with Lotus' support of OLE before any hard decisions can be made.

Lotus' NotesView lacks support for key back-end platforms. See page 49.

Directory API

CONTINUED FROM COVER 1

matter where they are located

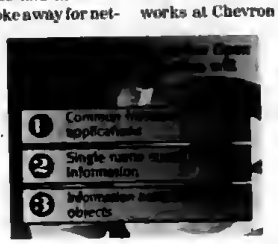
"The [availability of] ODSI API will be like exchanging the 'Twelve Labors of Hercules' for a day at the beach," said Bob Bowman, chief information officer at Deacoeess Health Systems, Inc. in St. Louis.

The ODSI API — which is actually a set of four separate APIs (see story at right) — is due out sometime next year, said Mike Nash, group product manager for Windows NT Server at Microsoft So compelling is the notiou of a single API that will simplify all aspects of directory services operations, that rivals Novell, Inc and Banyan Systems, Inc. have already said they will support the effort.

This is welcome news for users such as Bowman, who said the value of a single, standard API to access all directory services is "inestimable. I'd love to have it — yesterday," he said.

Having the standard set of ODSI APIs means Deaconess will no longer have to worry about the underlying directory services architecture — whether it is NetWare Oirectory Services, Windows NT Server Domain Server, Notes or X.500, Bowman said. And Deaconess' programmers will no longer have to be concerned with the number or type of network protocols the facility runs.

"All network resources and information will be just a keystroke away for network administrators and end users. And it will be 10 times easier for our in-house programmers to map resources into applications," Bowman said.



Chelly Catlin, second vice presideet of infrastructure services at The Chase Manhattan Bank NA in New York agreed. With thousands of users at remote sites, deploying and managing multiple directories "has become more problematic and unwieldy," she said. Like the rest of the industry, Chase has found that writing applications for different directories means using directory-specific APIs and learning different utilities and drives to manage and maintain each directory.

"It literally triples the workload of our programmers and administratnrs. Every time our users go to access a different directory, they have to use a different logon, which is also a paie," Catlin said.

With responsibility for 26,000 users, Kiran Movva, base technologist for networks at Chevron Information Technology Co., said having a standard API for all directories "would be a godsend." But Microsoft must meet its deadlines and ensure that it is easy for businesses to use the ODSI API, he cautioned "It sounds great, but how easy will it be for me to recompile and port my present directory services codes to the new ODSI API?" Movva asked.

Nash said it is not a problem. "There's no recompiling involved, ODSI performs all of the necessary handshakes to access the correct directory," he said.

Manage Windows NT and NetWare file servers from one console. See page 49.

ODSI explanation

Microsoft's ODSI API is a "container" that consists of four APIs that address the specific functions of various directory services.

The APIs will let users and network administrators access all network resources as OLE objects. OLE is a set of Microsoft interfaces for integrating applications and software components. It allows developers to assemble applications from pre-existing software building blocks called OLE controls.

To ensure that the ODSI API is an industry standard, Microsoft will team with other vendors to develop the OLE Directory Service specification, said Mike Nash, group product manager for Windows NT Server at Microsoft. When it ships, the ODSI APIs will be bundled free in Windows NT Workstation and Windows 95.

—Laura DiDio

3M goes beyond 1/4-inch standard in expanding tape's potential

Tape has always played second fiddle to disks as magnetic storage media, but a new format, called Travan, promises to give tape a broader, more flexible role.

In addition, some suppliers say Travan will serve as a scalable building block for low-cost tape libraries holding hundreds of gigabytes, giving PC LANs, workgroups and business departments a more effective means of secondary storage.

Travan was proposed as a new format by the 3M Data Storage Products Division. An industry coalition, Quarter-Inch Cartridge Drive Standards, approved it in March as a new ¼-in. tape format.



Travan brings mainframe-like storage management to poorly managed data.

Charles Babcock

Travan, in fact, is not ¼-in. tape, but .315-in. The wider media — along with more tape wound into the cartridge — gives Travan 236% more capacity than its predecessor ¼-in. minicartridges.

Although widely used, ¼-in. tape has been struggling to keep up with the expansion of PC capabilities. If a PC's hard drive is larger than the capacity of the tape backup device, it is no longer possible to do a backup with a single command and without manual intervention.

A leading ¼-in. drive, the QIC 80 Jumbo 250 from Hewlett-Packard's Colorado Memory Systems Division, had a native capacity of 120M bytes; the recently expanded version reaches 170M bytes. Add compression and you can double those figures, but some power users' hard drives already exceed those ceilings.

Travan maximizes the capacity of tape drives that can still fit in the 3½-in. disk drive slot. As a stand-alone device, your tape drive suddenly becomes a good place to download large files from the Internet.

The length of the tape has increased from 425 feet in the Jumbo 250 to 750 feet in Travan-based drives, or from less than one and a half football fields to two and a half football fields. This enlarged form factor yields an initial capacity of 400M bytes, matching all but the largest PC hard drives.

3M spokesman Wayne Roen in St. Paul, Minn., says the first iteration of Travan will be quickly followed by capacity increases to 800M bytes and 1.6G bytes by this fall. And before the year is out, Travan drives with magneto resistance heads, which read smaller bit sizes, will push the Travan format to 4G bytes per cartridge.

Now 4 mm digital audio tape and 8mm tape devices used in the workgroup and server backup/recovery market easily match or exceed these capacities — but not at the prices of the early Travan drives. HP's Colorado Memory Systems unit is listed at $235 and was advertised by a retailer in the *San Jose Mercury News* last week at $179, says Fara Yale, an analyst at Dataquest in San Jose, Calif.

Even though Travan represents a different physical size, Travan-based drives can read data off the older ¼-in. cartridges, such as QIC 80, 3010 and 3020 minicartridges. Your existing library of QIC backup tapes is not suddenly obsolete.

3M is working with PGSoft and Cbili Pepper Software to supply Windows applications that attack key PC storage problems. Hard drives fill up with little-used files. Chili Pepper's Space Wizard gives end users the ability to migrate files off the hard drive by dragging the file name to a drive A icon that is actually a tape drive. The user may still ask for the file from the hard drive's directory, but pointers route the call out to the tape drive.

Usually, a proposed new format sets off a round of competition in which a competing standard is advanced. But Travan is attracting a flock of manufacturers. HP's Colorado Memory Systems and Connor Peripherals are producing Travan drives. And Pertec Memories, Exabyte, Sony and Iomega expect to have them on the market soon. Exabyte is a somewhat surprising convert, given its heavy commitment to 4mm and 8mm tape products.

Travan will compete with and displace some 4mm tape devices on the PC and workstation fronts, Yale predicts. As manufacturing expertise builds in the new format, Travan mass storage devices for LAN and workgroups will bring more mainframe-like, hierarchical storage management to some of the most poorly managed data in the enterprise.

Babcock is *Computerworld*'s technical editor. His Internet address is cbabcock@cw.com

How to contact *Computerworld* editors:

	Phone:	Fax:
Main office, Framingham, Mass.	(508) 879-0700	(508) 875-8931
Mid-Atlantic bureau, Rochelle Park, N.J.	(201) 587-0090	(201) 712-1808
Washington bureau, Washington	(202) 347-0134	(202) 347-2365
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Northwest bureau, Bellevue, Wash.	(206) 641-7770	(206) 747-1021

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Inside Lines

Will Mr. Wang go to Washington?

The U.S. Justice Department is intensifying its antitrust investigation of Computer Associates' $1.74 billion bid for rival Legent. Sources close to the investigation say the Justice Department is becoming more concerned about the impact a combined CA/Legent would have on competition in the mainframe systems software space — and not just in the IBM VSE arena that the feds initially identified. The department has since expanded its investigation to include the impact a CA/Legent merger would have on certain IBM MVS software markets because of an outcry from rival vendors such as Sterling Software and from MVS software users. CA's tender offer of $47.95 per share is set to expire tomorrow.

For the common good

Microsoft's plans for ever-more commonality among its development tools will take a step forward following delivery of Windows 95. Visual Basic Release 4.0 and the Windows 95 version of Microsoft Access will share the same new Jet database engine, which supports data replication, a spokesman confirmed. And both tools will also use a new object browser slated to debut soon.

A midsummer night's midrange dream

Lawson Software will show off a common version of its client/server financial applications for the AS/400 and Unix systems at a user group meeting next week. But the AS/400 piece will remain just a dream for another month or two while Lawson tidies up the code a bit. The product should be one of the first packaged AS/400 applications to banish the traditional green screen for something more colorful and less host-centric. Lawson, which has sold client/server software on Unix boxes since 1993, is one of the big catches IBM has made as it trolls the AS/400 in more modern waters.

ATM: Can you manage it?

Lack of management tools is but one problem slowing the deployment of networks using ATM communication, a high-bandwidth multimedia link that switches cell-based traffic among nodes. Two vendors will announce a partnership this week to help administrators monitor, analyze and manage production ATM networks. Teaming are protocol analyzer supplier Network General and ZeitNet, a 2-year-old developer of ATM adapters and software.

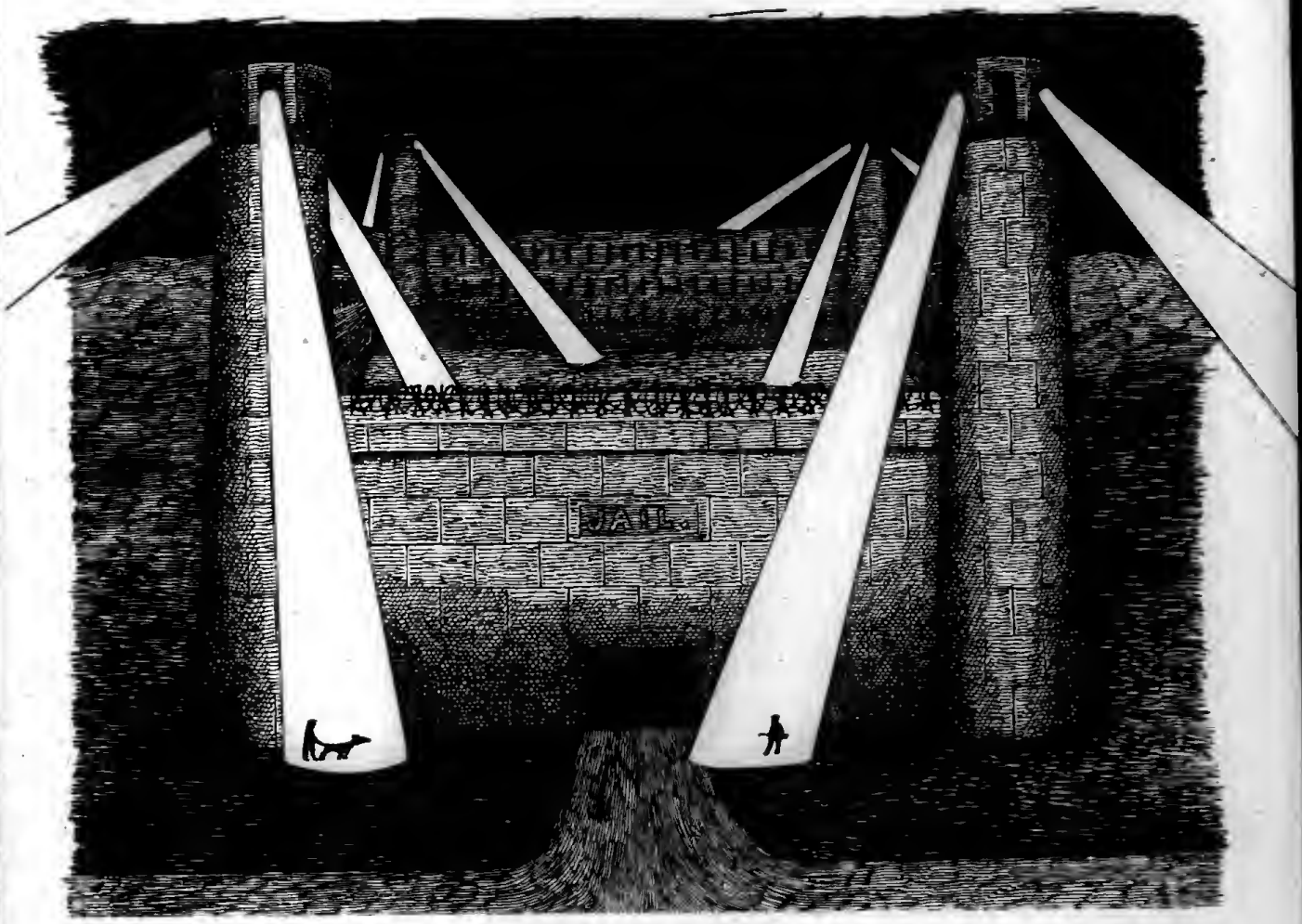
Rmon 2 ready

When the Internet Engineering Task Force (IETF) meets this week in Stockholm, one working group should have good news for administrators who want to monitor network applications from their enterprise management consoles. Rmon 2, the next-generation management database for remote monitoring of LANs across distributed networks, probably will reach the draft standard stage this month, according to an IETF leader. This means vendors can begin providing probes that describe protocol and application traffic on remote LANs, not just low-level status about devices on the backbone.

Talk about ubiquity!

Microsoft isn't leaving any stone unturned in its efforts to get Windows 95 installed on every computer. On Saturday, Microsoft gave viewers of the QVC home shopping channel the chance to place advance orders for Windows 95 before it hits stores on Aug. 24. The two-hour show also included promotional coupons and discounts on third-party software. The Redmond, Wash., software giant also sent four of its technical staff to QVC to answer viewers' call-in questions about the new operating system.

On the block ... Borland's stock is off the most actively traded lists, where it spent some frenzied days a few weeks ago. But rumor has it that the firm's acquisition by Novell is virtually a done deal in principle, if they could only agree on a price; neither company will comment on the matter. If you'd like to comment on that deal or pass on any tips or quips, you can call our 24-hour voice-mail tip line at (508) 820-8566 or our toll-free number at (800) 343-6474. News editor Maryfran Johnson can be reached by phone at (508) 820-8179 or via the Internet at mjohnson@cw.com.



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